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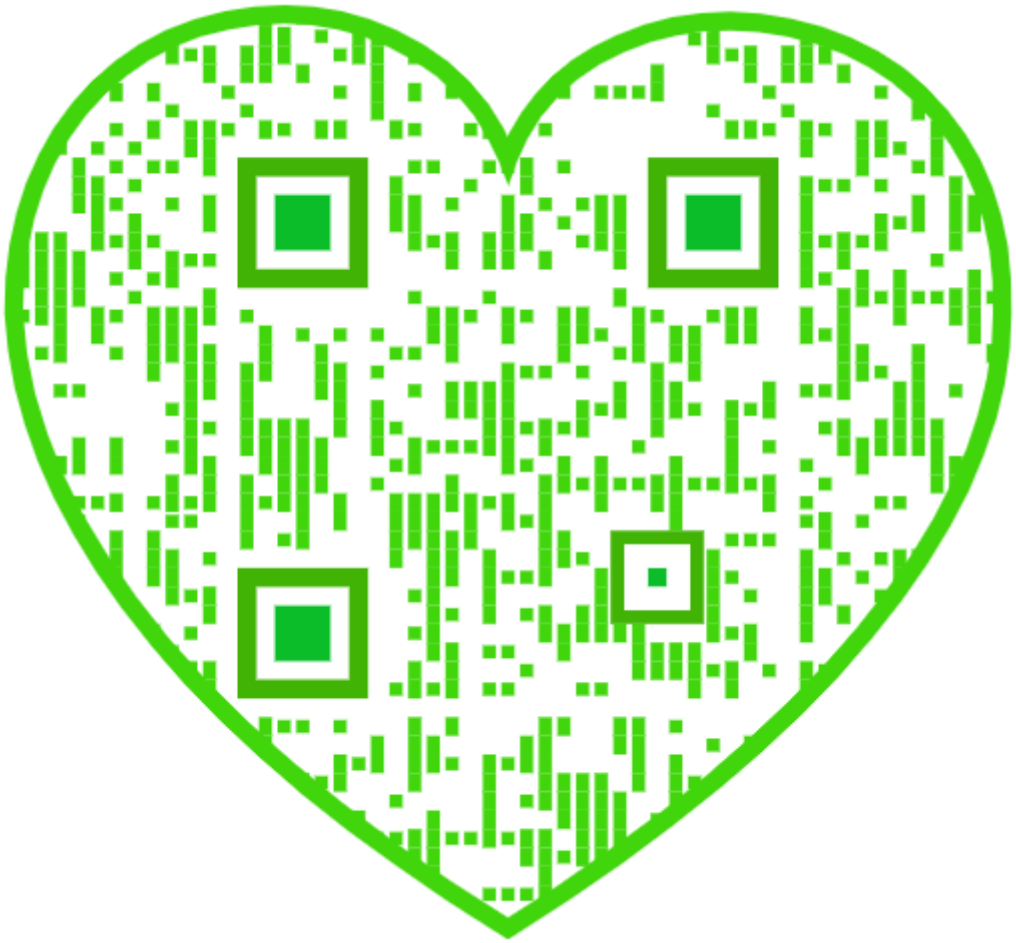

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BULLETIN No. 59.

U. S. DEPARTMENT OF AGRICULTURE,
DIVISION OF CHEMISTRY.

THE

COMPOSITION OF AMERICAN WINES.

W. D. BIGELOW,
SECOND ASSISTANT CHEMIST.

PREPARED UNDER THE DIRECTION OF H. W. WILEY,
CHIEF CHEMIST.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1900.

LETTER OF TRANSMITTAL.

U. S. Department of Agriculture,
Division of Chemistry,
Washington, D. C., August 21, 1900.

Sir: I have the honor to transmit for your inspection and approval the accompanying manuscript of a compilation of the analyses of American wines, which has been prepared in this Division by Dr. W. D. Bigelow. The tables of analyses are accompanied by statements in regard to the interpretation of the analytical results and by a description of the best methods now in use for the analysis of wines. It is proposed to publish this compilation and the accompanying text as Bulletin No. 59 of this Division.

Respectfully,

Ervin E. Ewell,
Acting Chief of Division.

Hon. James Wilson,
Secretary.

INTRODUCTION.

The rapid growth of viticulture in the United States indicates that this branch of agriculture will soon assume national importance. It is evident from a cursory study of this industry that it has often been conducted in a desultory manner, without scientific control and without the aid of experts either on the part of the grape growers or the wine makers. It is not at all surprising, therefore, under these conditions, that the American wines should vary greatly in character among themselves and also from wines of the same type in other countries.

The red wines or clarets, which are made in an indiscriminate way in the various parts of the country, under widely varying climatic conditions and without uniformity of methods in fermentation or clearing, are evidently of the most widely diverging character.

This great variation in the character of our wines has been the chief impediment in the way of their becoming established in the markets of this country as well as of the world. A wine merchant is not able to handle a brand of wine which varies from year to year in such a manner as to be almost unrecognizable as being of the same variety. He demands a uniformity of type which, with slight variations due to the conditions of the vintage, may be practically the same from year to year.

It is believed that one of the first steps toward securing such a uniformity in the types of our wines will be accomplished by bringing together, in so far as possible, the data which have been obtained in the analyses of wines in different parts of the country. The object of this compilation is not so much to show the character of our wines as to indicate their widely divergent properties. One object which has been kept in view also has been to make a starting point for future investigations in regard to the uniformity of our wines of reasonably well-established types.

The analytical data which follow, therefore, must be considered solely in this light, namely, as an expression of what has been accomplished heretofore in the analysis of wine in this country over a series of years, as the result of the investigations conducted by various analysts and by methods which have been entirely lacking in uniformity. The desirability of having all these analyses compiled lies in having them accessible as knowledge.

There is, however, one caution to be observed, and that is that these analyses are not to be accepted in any way as expressing the quality of the American wines produced to-day by the competent wine makers in wineries conducted in accordance with the latest scientific principles of fermentation and ripening.

It is our purpose to take up at once the investigation of which the following compilation of analyses is introductory and to determine by careful chemical studies all the typical American wines and their chief characteristics.

The analyses which are compiled in the following bulletin have been made in various parts of the country, and include those which have been made at various times in the Department of Agriculture. The work of compiling these data has been intrusted to Dr. W. D. Bigelow, who has also prepared the text describing the official methods of analysis employed and the slight variations which have been introduced from time to time as suggested by the experience obtained during the progress of the analytical work.

H. W. WILEY.

JUNE 18, 1900.

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COMPOSITION OF AMERICAN WINES.

TABLES OF ANALYSES.

It was intended when this compilation was begun to include only the analyses of wines of known purity. As the work progressed, however, it was deemed advisable to include the data of all analyses of samples having a definite history or origin.

A large number of known samples of California wines have been examined, but only a few complete analyses have been made. Ordinarily only those determinations were made which were essential to the control of the fermentation. In other States very little attention seems to have been given to the composition of wine. A few laboratories have purchased samples on the market for the purpose of analysis, but usually the source of the wine was not ascertained. It therefore seemed desirable to include all the analyses which could be found of samples which from their labels and composition appeared to be pure and whose sources were stated.

The volume of work which has been done is not sufficient to justify the adoption of standards for American wines. It appears that our wines differ to some extent from those of other countries, but we are not yet able to determine just how great these differences are. It seems important, therefore, that this work should be continued, and that the musts and wines from all the wine-producing sections of the country should be examined.

In the first of the tables which follow is given a list of the samples of wine analyzed, together with all the descriptive data available. The second table contains the results of the analysis of these samples, recalculated for the sake of uniformity. The numbers assigned to the samples, arranged consecutively in the first table, are the same in the second, though differently arranged. The tables for use in the examination of wines are placed at the end of the bulletin.

Description of samples of American wines analyzed.

ARKANSAS WINES.

No.	Laboratory No.	Variety.	Source.	Analyst.
1	.....	Hock.....	Dengler, Hot Springs.....	C. B. Collingwood.[1]
2	.....	Claret.....	.....do.....	

[1] Published in Second Annual Report of the Arkansas Agricultural Experiment Station, 1889.

Description of samples of American wines analyzed—Continued.

CALIFORNIA WINES.

No.	Laboratory No.	Variety.	Source.	Analyst.
3	12627	St. Hubert port	California Wine Growers' Union, San Francisco.	W. H. Krug, United States Department of Agriculture.[1]
4	12628	St. Hubert sherry	do	Do.
5	12629	Riesling, 1887	F. Albertz, Cloverdale	Do.
6	12630	St. Hubert Sauterne	California Wine Growers' Union, San Francisco.	Do.
7	12631	St. Hubert Sauterne, Château Yquem.	do	Do.
8	12632	St. Hubert Margaux	do	Do.
9	12633	St. Hubert claret	do	Do.
10	12634	Zinfandel	G. Migliavacca, Napa City	Do.
11	12635	Claret	H. Lefranc, San Jose	Do.
12	12636	Sauterne	do	Do.
13	12637	Burgundy	do	Do.
14	12638	Hock	do	Do.
15	12639	Riesling	do	Do.
16	12640	Muscatel	Wm. Palmtag, Hollister	Do.
17	12641	Gutedel	do	Do.
18	12642	Cabernet	do	Do.
19	12643	Johannisberger Riesling	do	Do.
20	12644	Pinot Gris, Asti	Italian-Swiss Agricultural Colony, Sonoma County.	Do.
21	12645	Sauvignon Cabernet	Wm. Palmtag, Hollister	Do.
22	12646	Riesling, Asti	Italian-Swiss Agricultural Colony, Sonoma County.	Do.
23	12647	Tipo Chianti, Asti	do	Do.
24	12648	Burgundy, Asti	do	Do.
25	12649	Barbera, Asti	do	Do.
26	12650	Burger, Asti	do	Do.
27	12651	Zinfandel, Asti	do	Do.
28	12652	Gutedel	Wm. Wehner, Evergreen	Do.
29	12653	Château Yquem	do	Do.
30	12654	Haut Sauterne	do	Do.
31	12655	Sauterne	do	Do.
32	12656	Cabernet El Quito, table wine	Santa Clara County	Do.
33	12657	El Quito, dessert wine	do	Do.
34	12658	Port Trousseau, vintage 1884.	L. J. Rose Co., Limited, San Gabriel.	Do.
35	12659	Burgundy	J. C. Merithew, San Jose	Do.
36	12660	Zinfandel	do	Do.
37	12661	Cabernet	do	Do.
38	12662	Jurançon	A. G. Chauché, San Francisco	Do.
39	12663	Chablis	do	Do.
40	12664	Sherry, vintage 1882	L. J. Rose Co., Limited, San Gabriel.	Do.
41	12665	Haut Sauterne, 1888	Geo. West & Son, Stockton	Do.
42	12666	Hock	Ewer & Atkinson, Rutherford	Do.
43	12667	Burgundy	do	Do.
44	12668	Sauterne	do	Do.
45	12669	Cabernet	do	Do.
46	12671	Zinfandel	H. W. Crabb, Oakville	Do.
47	12672	Hermitage	do	Do.
48	12673	Burgundy	do	Do.
49	12674	Claret	do	Do.
50	12675	Chablis	do	Do.
51	12676	Riesling	do	Do.
52	12677	Cabernet Traminer	J. Gundlach & Co., San Francisco.	Do.
53	12678	Cabernet Gutedel	do	Do.
54	12679	Port	do	Do.
55	12680	Tokay	do	Do.
56	12684	Château Gundlach	do	Do.
57	12685	Sauterne	do	Do.
58	12686	Semillon	do	Do.
59	12687	Cabernet Sauvignon	do	Do.
60	12688	Burgundy	do	Do.
61	12689	Chambertin, Burgundy	do	Do.
62	12690	Cabernet	Napa Valley Wine Co., San Francisco.	Do.
63	12691	Angelica, 1890	Julius P. Smith, Livermore	Do.
64	12692	Sauterne, 1889	Los Hermanos Vineyard, Beringer Bros., St. Helena.	Do.
65	12693	Claret, 1889	do	Do.
66	12694	Zinfandel, 1889	do	Do.
67	12695	Burgundy, 1889	do	Do.
68	12696	Old Hock, 1889	do	Do.
69	12697	Riesling, 1889	do	Do.
70	12698	Sauterne, 1888	Julius P. Smith, Livermore	Do.

[1] Published in Report of California State Viticultural Commission for 1893–94, Appendix B.

Description of samples of American wines analyzed—Continued.

CALIFORNIA WINES—Continued.

No.	Laboratory No.	Variety.	Source.	Analyst.
71	12699	Haut Sauterne, 1887	Julius P. Smith, Livermore	W. H. Krug, United States Department of Agriculture.
72	12700	Haut Sauterne, 1888	do	Do.
73	12701	Haut Sauterne, 1890	do	Do.
74	12702	Haut Sauterne, 1891	do	Do.
75	12703	Claret, 1890	do	Do.
76	12704	Cabernet, 1890	do	Do.
77	12705	Malbeck, 1891	do	Do.
78	12706	Zinfandel, 1891	do	Do.
79	12707	Burgundy, 1888	do	Do.
80	12708	Riesling, 1887	do	Do.
81	12709	Riesling, 1890	do	Do.
82	12710	Port	I. De Turk, Santa Rosa	Do.
83	12711	Sherry	do	Do.
84	12712	Cabernet	do	Do.
85	12713	Zinfandel	do	Do.
86	12714	Burgundy	do	Do.
87	12715	Sauterne	do	Do.
88	12716	Riesling	do	Do.
89	12717	Burgundy (red seal)	Ben Lomond Wine Co., Santa Cruz County.	Do.
90	12718	Burgundy (gold seal)	do	Do.
91	12719	Claret	do	Do.
92	12720	Gray Riesling, 1887	do	Do.
93	12721	Gray Riesling, 1888	do	Do.
94	12722	Claret	Howes' Vineyard, Mountain View.	Do.
95	12723	Cabernet	do	Do.
96	12724	Sauterne	do	Do.
97	12725	Riesling	do	Do.
98	12726	Chablis	C. C. McIver, Mission San Jose	Do.
99	12727	Sauterne	do	Do.
100	12728	Zinfandel	do	Do.
101	12729	Hock, Linda Vista	do	Do.
102	12730	Riesling, Linda Vista	do	Do.
103	12731	Moselle, Linda Vista	do	Do.
104	12732	Burgundy	Jacob Schram, St. Helena	Do.
105	12733	Claret	do	Do.
106	12734	Sauterne	do	Do.
107	12735	Sauvignon Vert	do	Do.
108	12736	Hock	do	Do.
109	12737	Riesling	do	Do.
110	12738	Chablis, Asti	Italian-Swiss Agricultural Colony, Sonoma County.	Do.
111	12739	Chasselas, Asti	do	Do.
112	12740	Sweet Muscatel, Asti	do	Do.
113	12741	Mataro, Asti	do	Do.
114	12742	Barolo, Asti	do	Do.
115	12743	Port, Asti	do	Do.
116	12744	Malbeck, 1888	Julius P. Smith, Livermore	Do.
117	12745	Burgundy, 1891	do	Do.
118	12746	Cabernet, 1888	do	Do.
119	12747	Zinfandel, 1888	do	Do.
120	12748	Sauterne, 1890	do	Do.
121	12749	Port, 1892	do	Do.
122	12750	Sauterne	H. W. Crabb, Oakville	Do.
123	12751	Port	do	Do.
124	12752	Muscatel	do	Do.
125	12753	Catawba	do	Do.
126	12754	El Quito table wine, Carignane.	Santa Clara County	Do.
127	12757	Haut Médoc, Côte d'Eta, 1890.		Do.
128	12758	Haut Médoc, Côte d'Eta, 1891.		Do.
129	12759	White Burgundy, Côte d'Eta, 1891.		Do.
130	12760	Haut Sauterne, Côte d'Eta, 1890.		Do.
131	12761	Haut Sauterne, Côte d'Eta, 1891.		Do.
132	12762	Hedgeside Cabernet, 1885	Hedgeside Vineyard, Napa	Do.
133	12763	Hedgeside Cabernet, 1886	do	Do.
134	12764	Mataro, 1890	Chas. M. Hammond, Upper Lake	Do.
135	12765	Mataro, 1891	do	Do.
136	12766	White Semillon, 1890	do	Do.
137	12767	White Semillon, 1891	do	Do.
138	12768	Semillon, 1890	F. W. Billing, Redwood City	Do.
139	12769	Gutedel, 1890	do	Do.
140	12770	Marsanne, 1890	do	Do.
141	12771	Sauvignon Vert, 1890	do	Do.

Description of samples of American wines analyzed—Continued.

CALIFORNIA WINES—Continued.

No.	Laboratory No.	Variety.	Source.	Analyst.
142	12772	Franken Riesling, 1890	F. W. Billing, Redwood City	W. H. Krug, United States Department of Agriculture.
143	12773	Green Hungarian, 1890	do	Do.
144	12774	Sauterne Souvenir, Cresta Blanca.	Chas. A. Wetmore, Livermore	Do.
145	12775	Château Yquem, Cresta Blanca.	do	Do.
146	12776	Table d'Hôte, Cresta Blanca	do	Do.
147	12777	Alto Douro, Cresta Blanca	do	Do.
148	12778	Angelica, 1888	Barton Estate Co., Limited, Barton Vineyard, Fresno County.	Do.
149	12779	Cabernet, 1890	I. De Turk, Santa Rosa	Do.
150	12781	Ruby Hill Claret	J. Crellin & Sons, Livermore	Do.
151	12782	Ruby Hill Cabernet	do	Do.
152	12783	Ruby Hill Burgundy	do	Do.
153	12784	Ruby Hill Sauterne	do	Do.
154	12785	Ruby Hill Haut Sauterne	do	Do.
155	12786	Ruby Hill Hock	do	Do.
156	12787	Ruby Hill Riesling	do	Do.
157	12788	Claret, 1896	G. Migliavacca, Napa City	Do.
158	12789	Zinfandel, 1888	F. Albertz, Cloverdale	Do.
159	12790	Château Moulton	do	Do.
160	12791	Sauterne, 1887	do	Do.
161	12792	Golden Chasselas	J. L. Beard, Warm Springs	Do.
162	12793	Mataro	do	Do.
163	12794	Zinfandel	do	Do.
164	12795	do	Otto Norman, Howell Mountain	Do.
165	12796	Cabernet Sauvignon	do	Do.
166	12797	Riesling	do	Do.
167	12798	Cabernet Gutedel	do	Do.
168	12799	Traminer, 1890	F. W. Billing, Redwood City	Do.
169	12800	Mondeuse, 1890	do	Do.
170	12801	Port	C. C. McIver, Mission San Jose	Do.
171	12802	Rhine Wine type, 1891	Tiburcio Parrott, St. Helena	Do.
172	12803	Château Margaux, 1889	do	Do.
173	12804	Sauterne type, 1886	do	Do.
174	12805	Sherry	Lisbon Winery Co., Mathews, Napa County.	Do.
175	12806	Zinfandel	do	Do.
176	12807	Riesling	do	Do.
177	12808	Claret, 1887	George West & Son, Stockton	Do.
178	12809	Claret, 1888	do	Do.
179	12810	Claret, 1889	do	Do.
180	12811	Port, 1882	do	Do.
181	12812	Port, 1885	do	Do.
182	12813	Port, 1886	do	Do.
183	12814	Port, 1888	do	Do.
184	12815	Sherry, 1885	do	Do.
185	12816	Sauvignon, Asti	Italian-Swiss Agricultural Colony, Sonoma County.	Do.
186	12817	Pinot Blanc, Asti	do	Do.
187	12818	Sauterne, Asti	do	Do.
188	12819	Dry Muscatel, Asti	do	Do.
189	12820	Angelica, Asti	do	Do.
190	12821	Sherry, Asti	do	Do.
191	12823	Zinfandel	C. Carpy & Co., San Francisco	Do.
192	12824	La Loma, 1886	do	Do.
193	12825	Burgundy	do	Do.
194	12826	Riesling	do	Do.
195	12827	Sauterne	do	Do.
196	12828	Johannisberg Riesling	F. Haesters, Wrights	Do.
197	24	Feher Szagos, 1881	Fresno	E. W. Hilgard, California Experiment Station.[1]
198	25	do	do	Do.
199	83	Mataro, 1883		Do.
200	84	do		Do.
201	85	Grenache, 1883		Do.
202	86	do		Do.
203	87	Carignane, 1883		Do.
204	88	do		Do.
205	90	Zinfandel, 1883		Do.
206	91	do		Do.
207	92	Chauché Gris, 1883	St. Helena	Do.
208	93	do	Glenwood	Do.
209	94	Franken Riesling, 1883	St. Helena	Do.
210	95	Chauché Noir, 1883		Do.

[1] Published in Viticultural Report of Cal. Exp. Sta. for 1887–1895.

Description of samples of American wines analyzed—Continued.

CALIFORNIA WINES—Continued.

No.	Laboratory No.	Variety.	Source.	Analyst.
211	117	Chauché Gris, 1883	Fresno	E. W. Hilgard, California Experiment Station.
212	211	Malbeck, 1884	Natoma	Do.
213	212	Cabernet Franc, 1884	do	Do.
214	213	do	Gubserville	Do.
215	214	Cabernet Sauvignon, 1884	Natoma	Do.
216	215	Merlot, 1884	do	Do.
217	216	Verdot, 1884	do	Do.
218	217	Tannat, 1884	Oakville	Do.
219	218	Beclan, 1884	Natoma	Do.
220	219	Carignanc, 1884	do	Do.
221	220	Grossblaue, 1884	St. Helena	Do.
222	221	Black Burgundy, 1884	Oakville	Do.
223	222	Black Pinot, 1884	Lakeport	Do.
224	223	Meûnier, 1884	St. Helena	Do.
225	224	do	Glenwood	Do.
226	226	Zinfandel, 1884	Livermore	Do.
227	227	do	Penryn	Do.
228	230	Trousseau, 1884	Stockton	Do.
229	231	do	Gubersville	Do.
230	232	Petite Sirat, 1884	Natoma	Do.
231	233	do	do	Do.
232	235	Mondeuse, 1884	do	Do.
233	236	do	do	Do.
234	237	Cinsaut, 1884	do	Do.
235	238	Aramon, 1884	do	Do.
236	239	Mouastel, 1884	do	Do.
237	240	Grenache, 1884	do	Do.
238	241	do	Gubserville	Do.
239	242	Petit Bouschet, 1884	Natoma	Do.
240	243	do	do	Do.
241	252	Semillon, 1884	do	Do.
242	254	Sauvignon Blanc, 1884	do	Do.
243	255	do	do	Do.
244	258	Folle Blanche, 1884	do	Do.
245	259	do	Livermore	Do.
246	260	Burger, 1884	San Gabriel	Do.
247	261	do	Fresno	Do.
248	263	Marsanne, 1884	Natoma	Do.
249	264	Clairette Blanche, 1884	do	Do.
250	266	Pedro Jimenes, 1884	do	Do.
251	267	Palomino, 1884	do	Do.
252	268	Perruno, 1884	do	Do.
253	269	Mantuo de Pilas, 1884	do	Do.
254	270	Mourisco Branco, 1884	do	Do.
255	272	Verdelho, 1884	do	Do.
256	273	Boal de Madeira, 1884	do	Do.
257	274	Ugni Blanc, 1884	do	Do.
258	275	Malmsey, 1884	do	Do.
259	294	Cabernet Franc, 1885		Do.
260	342	Franken Riesling, 1885	Mission San Jose	Do.
261	344	Pfeffer's Cabernet, 1885	San Jose	Do.
262	345	Black Pinot, 1885	Mission San Jose	Do.
263	348	Burger, 1885	Vina	Do.
264	349	do	Harrisburg	Do.
265	350	Pfeffer's Cabernet, 1885	Gubserville	Do.
267	354	Burgundy, 1885	Mission San Jose	Do.
268	356	Pfeffer's Cabernet, 1885	Gubserville	Do.
269	359	Chauché Gris, 1885	Glenwood	Do.
270	361	Merlot, 1885	do	Do.
271	362	Burger, 1885	Lower Lake	Do.
272	365	Franken Riesling, 1885	Patchen	Do.
273	366	Burger, 1885	do	Do.
274	367	Verdal, 1885	do	Do.
275	384	Palomino, 1885	San Jose	Do.
276	471	Burger, 1886	Vina	Do.
277	481	Clairette Blanche, 1886	Mission San Jose	Do.
278	484	Pedro Jimenes, 1886	Natoma	Do.
279	487	Johannisberg Riesling, 1886	Cupertino	Do.
280	488	Kleinberger, 1886	do	Do.
281	489	Chauché Gris, 1886	do	Do.
282	490	Sauvignon Vert, 1886	do	Do.
283	491	Franken Riesling, 1886	do	Do.
284	500	West's White Prolific, 1886	do	Do.
285	501	Burger, 1886	do	Do.
286	505	West's White Prolific, 1886	do	Do.
287	508	Burger, 1886	Livermore	Do.
288	512	Verdal, 1886	do	Do.
289	513	Clairette Blanche, 1886	Mission San Jose	Do.

[1] Published in Viticultural Report of Cal. Exp. Sta. for 1895–1897.

Description of samples of American wines analyzed—Continued.

CALIFORNIA WINES—Continued.

No.	Laboratory No.	Variety.	Source.	Analyst.
290	515	Folle Blanche, 1886	Cupertino	E. W. Hilgard, California Experiment Station.
291	535	Clairette Blanche, 1886	Mission San Jose	Do.
292	538	Johannisberg Riesling, 1886	Patchen	Do.
293	540	Chauché Gris, 1886	do	Do.
294	585	Verdal, 1886	do	Do.
295	681	Burger, 1887	Fresno	Do.
296	682	Chauché Gris, 1887	do	Do.
297	683	Palomino, 1887	Livermore	Do.
298	694	Chauché Gris, 1887	Cupertino	Do.
299	695	West's White Prolific, 1887	do	Do.
300	696	Chasselas Doré, 1887	do	Do.
301	697	Sauvignon Vert, 1887	do	Do.
302	698	Palomino, 1887	do	Do.
303	699	Franken Riesling, 1887	do	Do.
304	701	Verdal, 1887	Livermore	Do.
305	708	Sauvignon Vert, 1887	Cupertino	Do.
306	715	Kleinberger, 1887	do	Do.
307	724	Sauvignon Vert, 1887	Livermore	Do.
308	727	Palomino, 1887	Mission San Jose	Do.
309	728	do	Cupertino	Do.
310	742	Johannisberg Riesling, 1887	do	Do.
311	745	Semillon, 1887	do	Do.
312	746	Barbarossa, 1887	do	Do.
313	748	Burger, 1887	do	Do.
314	749	West's White Prolific, 1887	do	Do.
315	750	Semillon, 1887	do	Do.
316	758	do	do	Do.
317	754	Burger, 1887	do	Do.
318	762	Folle Blanche, 1887	do	Do.
319	763	do	do	Do.
320	765	Palomino, 1887	do	Do.
321	771	Clairette Blanche, 1887	Mission San Jose	Do.
322	774	Sultano, 1887	Cupertino	Do.
323	776	Pinot Blanc Chardonay, 1887	do	Do.
324	781	Black Prince, 1887	do	Do.
325	784	Pedro Jimenes, 1887	do	Do.
326	785	Ugni Blanc, 1887	do	Do.
327	789	Feher Szagos, 1887	Fresno	Do.
328	830	Burger, 1888	do	Do.
329	845	Pinot Blanc, 1888	Cupertino	Do.
330	849	Pinot Blanc Chardonay, 1888	do	Do.
331	858	do	Mission San Jose	Do.
332	865	Kleinberger, 1888	Cupertino	Do.
333	866	do	do	Do.
334	867	Verdelho, 1888	do	Do.
335	874	Johannisberg Riesling, 1888	do	Do.
336	880	Sauvignon Vert, 1888	do	Do.
337	885	Franken Riesling, 1888	Mission San Jose	Do.
338	899	Semillon, 1888	Cupertino	Do.
339	900	do	do	Do.
340	914	Verdelho, 1888	Mission San Jose	Do.
341	917	Chasselas Doré, 1888	Cupertino	Do.
342	929	Franken Riesling, 1888	Santa Cruz	Do.
343	948	Clairette Blanche, 1888	Mission San Jose	Do.
344	953	Pedro Jimenes, 1888	Cupertino	Do.
345	954	Ugni Blanc, 1888	do	Do.
346	1068	Johannisberg Riesling, 1889	Mission San Jose	Do.
347	1075	Red Traminer, 1889	Cupertino	Do.
348	1084	Chauché Gris, 1889	Mission San Jose	Do.
349	1085	Boal de Madeira, 1889	do	Do.
350	1088	Kleinberger, 1889	do	Do.
351	1095	Sauvignon Vert, 1889	Fresno	Do.
352	1096	Chauché Gris, 1889	do	Do.
353	1100	Verdelho, 1889	Cupertino	Do.
354	1105	Rothgipfler, 1889	do	Do.
355	1106	Kleinberger, 1889	do	Do.
356	1108	Grüner Velteliner, 1889	do	Do.
357	1110	Pinot Blanc Chardonay, 1889	do	Do.
358	1112	Chasselas Doré, 1889	Mission San Jose	Do.
359	1121	Pinot Blanc Chardonay, 1889	do	Do.
360	1129	Franken Riesling, 1889	Cupertino	Do.
361	1130	Sauvignon Vert, 1889	do	Do.
362	1131	Semillon, 1889	do	Do.
363	1133	Zinfandel, 1889	do	Do.
364	1139	Johannisberg Riesling, 1889	do	Do.
365	1148	Vernaccia Bianca, 1889	do	Do.
366	1158	Wälschriesling, 1889	do	Do.
367	1167	Folle Blanche, 1889	do	Do.
368	1170	Clairette Blanche, 1889	Mission San Jose	Do.

Description of samples of American wines analyzed—Continued.

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CALIFORNIA WINES—Continued.

No.	Laboratory No.	Variety.	Source.	Analyst.
369	1173	Burger, 1889	Mission San Jose	E. W. Hilgard, California Experiment Station.
370	1174	Rother Steinschiller, 1889	do	Do.
371	1190	Peverella, 1889	Cupertino	Do.
372	1191	Pedro Jimenes, 1889	do	Do.
373	1195	Ugni Blanc, 1889	do	Do.
374	1196	Clairette Blanche, 1889	do	Do.
375	1197	Slankamenka, 1889	do	Do.
376	1201	Rother Steinschiller, 1889	do	Do.
377	1203	Verdelho, 1890	Fresno	Do.
378	1204	Trousseau, 1890	do	Do.
379	1205	Teinturier, 1890	do	Do.
380	1206	Blue Portuguese, 1890	do	Do.
381	1207	Chauché Gris, 1890	do	Do.
382	1208	Grüner Velteliner, 1890	do	Do.
383	1240	Wälschriesling, 1890	do	Do.
384	1241	Alicante Bouschet, 1890	do	Do.
385	1242	Sirah, 1890	do	Do.
386	1243	Gros Mansenc, 1890	do	Do.
387	1244	Pedro Jimenes, 1890	do	Do.
388	1246	Aramon, 1890	do	Do.
389	1247	Tinta de Madeira, 1890	do	Do.
390	1249	Grenache, 1890	do	Do.
391	1250	Verdot, 1890	do	Do.
392	1251	Carignane, 1890	do	Do.
393	1252	Mataro, 1890	do	Do.
394	1253	Zinfandel, 1890	do	Do.
395	1255	Mataro, 1890	Amador Station	Do.
396	1256	Mission, 1890	do	Do.
397	1261	Ploussard, 1890	Mission San Jose	Do.
398	1262	Blue Portuguese, 1890	do	Do.
399	1264	Johnnisberg Riesling, 1890	Cupertino	Do.
400	1272	Folle Blanche, 1890	do	Do.
401	1273	Franken Riesling, 1890	do	Do.
402	1274	Ruländer, 1890	do	Do.
403	1275	Sauvignon Vert, 1890	do	Do.
404	1276	Gamai Teinturier, 1890	do	Do.
405	1277	Gros Mansenc, 1890	do	Do.
406	1281	St. Macaire, 1890	do	Do.
407	1282	Kleinberger, 1890	do	Do.
408	1283	Teinturier, 1890	do	Do.
409	1292	do	do	Do.
410	1295	St. Macaire, 1890	Mission San Jose	Do.
411	1296	Sirah, 1890	do	Do.
412	1297	Verdelho, 1890	do	Do.
413	1298	Chauché Noir, 1890	do	Do.
414	1300	Boal de Madeira, 1890	do	Do.
415	1301	Tinta de Madeira, 1890	do	Do.
416	1302	Tannat, 1890	do	Do.
417	1304	Red Traminer, 1890	do	Do.
418	1307	Kadarkas, 1890	Cupertino	Do.
419	1309	Wälschriesling, 1890	Mission San Jose	Do.
420	1310	Moscatello Fino, 1890	Cupertino	Do.
421	1312	Mondeuse, 1890	do	Do.
422	1313	Affenthaler, 1890	do	Do.
423	1315	Ruländer, 1890	Mission San Jose	Do.
424	1317	Sauvignon Blanc, 1890	Cupertino	Do.
425	1318	Refosco, 1890	do	Do.
426	1326	Mourastel, 1890	do	Do.
427	1327	Fresa, 1890	do	Do.
428	1330	Mourastel, 1890	Mission San Jose	Do.
429	1334	Mondeuse, 1890	do	Do.
430	1339	Gros Mansenc, 1890	do	Do.
431	1340	Tinta Amarella, 1890	do	Do.
432	1341	Sirah, 1890	do	Do.
433	1342	Cabernet Sauvignon, 1890	do	Do.
434	1343	Refosco, 1890	do	Do.
435	1345	Muscat of Alexandria, 1890	do	Do.
436	1346	Grüner Velteliner, 1890	do	Do.
437	1352	Pedro Jimenes, 1890	do	Do.
438	1361	Verdal, 1890	Cupertino	Do.
439	1362	Bonardo, 1890	do	Do.
440	1363	Tinta de Madeira, 1890	do	Do.
441	1377	Aramon, 1890	Mission San Jose	Do.
442	1378	Petit Bouschet, 1890	do	Do.
443	1379	Tinta Cão, 1890	do	Do.
444	1381	Grossblaue, 1890	do	Do.
445	1382	Verdot, 1890	do	Do.

Description of samples of American wines analyzed—Continued.

CALIFORNIA WINES—Continued.

No.	Laboratory No.	Variety.	Source.	Analyst.
46	1383	Burger, 1890	Mission San Jose	E. W. Hilgard, California Experiment Station.
447	1384	Bonardo, 1890	Cupertino	Do.
448	1404	Pedro Jimenes, 1890	do	Do.
449	1405	Ugni Blanc, 1890	do	Do.
450	1406	Peverella, 1890	do	Do.
451	1408	Cinsant, 1890	Mission San Jose	Do.
452	1409	Carignane, 1890	do	Do.
453	1412	Marsanne, 1890	Cupertino	Do.
454	1414	Aramon, 1890	do	Do.
455	1415	Rother Steinschiller, 1890	do	Do.
456	1417	Affenthaler, 1890	Mission San Jose	Do.
457	1418	Kadarkas, 1890	do	Do.
458	1419	Lagrain, 1890	do	Do.
459	1420	Clairette Blanche, 1890	do	Do.
460	1434	Cinsaut, 1891	Tulare	Do.
461	1435	Petit Bouschet, 1891	do	Do.
462	1453	Verdal, 1891	do	Do.
463	1454	Grüner Velteliner, 1891	Fresno	Do.
464	1455	Sauvignon Vert, 1891	do	Do.
465	1456	Muscat of Alexandria, 1891	do	Do.
466	1458	Trousseau, 1891	do	Do.
467	1459	Tinta de Madeira, 1891	do	Do.
468	1460	Affenthaler, 1891	do	Do.
469	1463	Peverella, 1891	do	Do.
470	1464	Savignon Blanc, 1891	do	Do.
471	1465	West's White Prolific, 1891	do	Do.
472	1466	Verdelho, 1891	do	Do.
473	1467	Tinta Cão, 1891	do	Do.
474	1468	Gros Mansenc, 1891	do	Do.
475	1469	Fresa, 1891	do	Do.
476	1471	Mourastel, 1891	do	Do.
477	1472	Sirah, 1891	do	Do.
478	1473	Boal de Madeira, 1891	do	Do.
479	1474	Aramon, 1891	do	Do.
480	1482	Folle Blanche, 1891	do	Do.
481	1483	Sultano, 1891	do	Do.
482	1496	Refosco, 1891	Paso Robles	Do.
483	1497	Teinturier, 1891	do	Do.
484	1498	Trousseau, 1891	Asti, Sonoma County	Do.
485	1499	Chauché Gris, 1891	do	Do.
486	1501	Franken Riesling, 1891	do	Do.
487	1502	Pedro Jimenes, 1891	Fresno	Do.
488	1503	Feher Szagos, 1891	do	Do.
489	1505	Ploussard, 1891	Mission San Jose	Do.
490	1509	Chauché Gris, 1891	do	Do.
491	1410	Trousseau, 1891	do	Do.
492	1513	Sauvignon Vert, 1891	Calistoga	Do.
493	1514	do	Asti, Sonoma County	Do.
494	1515	St. Macaire, 1891	Mission San Jose	Do.
495	1516	Refosco, 1891	do	Do.
496	1517	Pinot Blanc, 1891	do	Do.
497	1518	Verdelho, 1891	do	Do.
498	1521	Teinturier, 1891	do	Do.
499	1525	Carignane, 1890	Asti, Sonoma County	Do.
500	1526	Refosco, 1891	do	Do.
501	1527	Grenache, 1891	Paso Robles	Do.
502	1561	Chasselas Doré, 1891	Mission San Jose	Do.
503	1562	Gros Mansenc, 1891	do	Do.
504	1563	Mondeuse, 1891	do	Do.
505	1564	Sirah, 1891	do	Do.
506	1565	Burger, 1891	do	Do.
507	1566	Tinta Amarella, 1891	do	Do.
508	1567	Tinta de Madeira, 1891	do	Do.
509	1568	Tinta Cão, 1891	do	Do.
510	1569	Mourastel, 1891	do	Do.
511	1572	Dolcetto, 1891	Asti, Sonoma County	Do.
512	1573	Barbera, 1891	do	Do.
513	1574	Mataro, 1891	do	Do.
514	1575	Nebliolo, 1891	do	Do.
515	1576	Carignane, 1891	Paso Robles	Do.
516	1577	Zierfahndler, 1891	Mission San Jose	Do.
517	1578	Kleinberger, 1891	do	Do.
518	1580	Gamai Teinturier, 1891	do	Do.
519	1581	Alicante Bouschet, 1891	do	Do.
520	1582	Mondeuse, 1891	do	Do.
521	1583	Affenthaler, 1891	do	Do.
522	1584	Refosco, 1891	do	Do.
523	1592	Verdot, 1891	do	Do.

Description of samples of American wines analyzed—Continued.

CALIFORNIA WINES—Continued.

No.	Laboratory No.	Variety.	Source.	Analyst.
524	1593	Pinot Blanc, 1891	Los Guilicos	E. W. Hilgard, California Experiment Station.
525	1594	César, 1891	Kenwood	Do.
526	1595	Mondeuse, 1891	do	Do.
527	1596	Mataro, 1891	Asti, Sonoma County	Do.
528	1599	Bonardo, 1891	Cupertino	Do.
529	1600	Fresa, 1891	do	Do.
530	1602	Peverella, 1891	do	Do.
531	1604	Grossblaue, 1891	Mission San Jose	Do.
532	1605	Grüner Velteliner, 1891	do	Do.
533	1606	Pedro Jimenes, 1891	do	Do.
534	1609	Mataro, 1891	Mountain View	Do.
535	1610	do	San Jose	Do.
536	1611	do	Mountain View	Do.
537	1614	Cinsaut, 1892	Tulare	Do.
538	1615	Refosco, 1892	Asti, Sonoma County	Do.
540	1618	Blue Portuguese, 1892	Tulare	Do.
541	1619	Marsanne, 1892	do	Do.
542	1626	Grenache, 1892	do	Do.
543	1627	Petit Bouschet, 1892	do	Do.
544	1628	Carignane, 1892	do	Do.
545	1629	Tinta Amarella, 1892	do	Do.
546	1630	Tinta de Madeira, 1892	do	Do.
547	1631	Aleatico, 1892	do	Do.
548	1639	Aramon, 1892	do	Do.
549	1640	West's White Prolific, 1892	do	Do.
550	1667	Burger, 1892	do	Do.
551	1668	Semillon, 1892	do	Do.
552	1670	Pedro Jimenes, 1892	do	Do.
553	1672	Folle Blanche, 1892	do	Do.
554	1673	Tinta Amarella, 1892	do	Do.
555	1674	Mourisco Preto, 1892	do	Do.
556	1675	Barbera, 1892	do	Do.
557	1677	Chasselas Doré, 1892	do	Do.
558	1683	Blue Portuguese, 1892	do	Do.
559	1684	Gamai Teinturier, 1892	Mission San Jose	Do.
560	1687	Perruno, 1892	Tulare	Do.
561	1689	Verdelho, 1892	do	Do.
562	1690	Mourastel, 1892	do	Do.
563	1705	Verdal, 1892	do	Do.
564	1706	St. Macaire, 1892	Mission San Jose	Do.
565	1707	Refosco, 1892	do	Do.
566	1708	Sirah, 1892	do	Do.
567	1709	Bastardo, 1892	do	Do.
568	1711	Sultano, 1892	do	Do.
569	1712	Kleinberger, 1892	do	Do.
570	1720	Mission, 1892	Paso Robles	Do.
571	1721	Grenache, 1892	do	Do.
572	1761	Tannat, 1892	do	Do.
573	1764	Mondeuse, 1892	Mission San Jose	Do.
574	1765	Cabernet Sauvignon, 1892	do	Do.
575	1766	Gros Mansenc, 1892	do	Do.
576	1767	Herbemont, 1892	do	Do.
577	1768	Grossblaue, 1892	do	Do.
578	1769	Tinta Cão, 1892	do	Do.
579	1770	Tinta Amarella, 1892	do	Do.
580	1771	Tinta de Madeira, 1892	do	Do.
581	1773	Burger, 1892	do	Do.
582	1774	Chauché Gris, 1892	do	Do.
583	1775	Barbarossa, 1890	do	Do.
584	1776	Chasselas Doré, 1892	do	Do.
585	1781	Vernaccia Bianca, 1892	do	Do.
586	1783	Rother Steinschiller, 1892	do	Do.
587	1785	Refosco, 1892	do	Do.
588	1789	Cinsaut, 1892	do	Do.
589	1791	Carignane, 1892	do	Do.
590	1793	Affenthaler, 1892	do	Do.
591	1796	Aleatico, 1893	Tulare	Do.
592	1797	Malbeck, 1893	do	Do.
593	1813	Blue Portuguese, 1893	do	Do.
594	1814	Sirah, 1893	do	Do.
595	1815	Blue Portuguese, 1893	do	Do.
596	1842	Cinsaut, 1893	do	Do.
597	1844	Charbono, 1893	do	Do.
598	1846	St. Macaire, 1893	do	Do.
599	1847	Sauvignon Vert, 1893	do	Do.
600	1850	Tinta de Madeira, 1893	Amador Station	Do.
601	1851	Aleatico, 1893	do	Do.
602	1864	Chauché Gris, 1893	Paso Robles	Do.
603	1865	Bastardo, 1893	do	Do.

Description of samples of American wines analyzed—Continued.

CALIFORNIA WINES—Continued.

No.	Laboratory No.	Variety.	Source.	Analyst.
604	1866	Gamai Teinturier, 1893	Paso Robles	E. W. Hilgard, California Experiment Station.
605	1868	Chauché Noir, 1893	do	Do.
606	1869	Bonardo, 1893	do	Do.
607	1880	Kleinberger, 1893	do	Do.
608	1881	Grossblaue, 1893	do	Do.
609	1882	Petit Bouschet, 1893	Tulare	Do.
610	1883	Franken Riesling, 1893	Paso Robles	Do.
611	1884	Refosco, 1893	do	Do.
612	1887	Carignane, 1893	Tulare	Do.
613	1888	Mondeuse, 1893	do	Do.
614	1891	Tinta Amarella, 1893	do	Do.
615	1895	Sirah, 1893	Paso Robles	Do.
616	1896	Tinta de Madeira, 1893	do	Do.
617	1897	Tinta Amarella, 1893	do	Do.
618	1898	Mourastel, 1893	Tulare	Do.
619	1899	Gros Mansenc, 1893	do	Do.
620	1902	Tinta Valdepeñas, 1893	do	Do.
621	1903	West's White Prolific, 1893	do	Do.
622	1904	Verdelho, 1893	do	Do.
623	1905	Perruno, 1893	do	Do.
624	1909	Folle Blanche, 1893	do	Do.
625	1911	Tannat, 1893	Paso Robles	Do.
626	1912	Verdal, 1893	Tulare	Do.
627	1913	Fresa, 1893	Paso Robles	Do.
628	1914	Cabernet Sauvignon, 1893	do	Do.
629	1915	Wälschriesling, 1893	do	Do.
630	1917	Malbeck, 1893	do	Do.
631	1918	Aramon, 1893	Tulare	Do.
632	1919	Moscatello Fino, 1893	do	Do.
633	1920	Tinta Cão, 1893	Paso Robles	Do.
634	1921	Mataro, 1893	do	Do.
635	1922	Mondeuse, 1893	do	Do.
636	1923	Mourisco Preto, 1893	do	Do.
637	1924	Tinta Valdepeñas, 1893	do	Do.
638	1930	Refosco, 1893	Tulare	Do.
639	1931	Barbera, 1893	do	Do.
640	1934	Charbono, 1893	Paso Robles	Do.
641	1953	Robin Noir, 1893	do	Do.
642	1956	Black Prince, 1893	do	Do.
643	1967	Beclan, 1893	Tulare	Do.
644	1968	Mourisco Preto, 1893	do	Do.
645	1969	Clairette Blanche, 1893	do	Do.
646	1970	Mourisco Branco, 1893	do	Do.
647	1978	Mission, 1893	do	Do.
648	1980	Barbarossa, 1892	do	Do.
649	1981	Kleinberger, 1893	do	Do.
650	1982	Verdal, 1893	do	Do.
651	1983	Ploussard, 1893	Mission San Jose	Do.
652	1984	Affenthaler, 1893	do	Do.
653	1985	Blue Portuguese, 1893	do	Do.
654	1986	Kadarkas, 1893	do	Do.
655	1987	Chauché Gris, 1893	do	Do.
656	1988	Slankamenka, 1893	do	Do.
657	1989	Grüner Velteliner, 1893	do	Do.
658	1990	Kleinberger, 1893	do	Do.
659	2000	Marsanne, 1893	Tulare	Do.
660	2001	Herbemont, 1893	do	Do.
661	2002	Lagrain, 1893	do	Do.
662	2003	Black Prince, 1890	do	Do.
663	2009	Petit Bouschet, 1893	Paso Robles	Do.
664	2010	Grenache, 1893	do	Do.
665	2015	Peverella, 1893	Mission San Jose	Do.
666	2016	Rother Steinschiller, 1893	do	Do.
667	2017	Red Traminer, 1893	do	Do.
668	2020	Folle Blanche, 1893	do	Do.
669	2062	Mondeuse, 1893	do	Do.
670	2063	St. Macaire, 1893	do	Do.
671	2068	Rother Steinschiller, 1893	Paso Robles	Do.
672	2069	West's White Prolific, 1893	do	Do.
673	2070	Cabernet Franc, 1893	do	Do.
674	2071	Mourastel, 1893	do	Do.
675	2073	Tinta Amarella, 1893	Mission San Jose	Do.
676	2074	Mourastel, 1893	do	Do.
677	2075	Chauché Noir, 1893	do	Do.
678	2076	Sirah, 1893	do	Do.
679	2080	Bakator, 1893	Paso Robles	Do.
680	2081	Carignane, 1893	do	Do.
681	2082	Verdal, 1893	Tulare	Do.
682	2083	Gros Mansene, 1893	Paso Robles	Do.

Description of samples of American wines analyzed—Continued.

CALIFORNIA WINES—Continued.

No.	Laboratory No.	Variety.	Source.	Analyst.
683	2137	Blue Portugese, 1894	Tulare	E. W. Hilgard, California Experiment Station.
684	2138	Cinsaut, 1884	do	Do.
685	2139	Sirah, 1894	do	Do.
686	2168	Petit Bouschet, 1894	do	Do.
687	2170	Grenache, 1894	do	Do.
688	2171	Refosco, 1894	do	Do.
689	2210	Carignane, 1894	do	Do.
690	2211	Barbera, 1894	do	Do.
691	2226	Petit Bouschet, 1894	Mission San Jose	Do.
692	2287	Sauvignon Vert, 1894	Tulare	Do.
693	2293	Petit Bouschet, 1894	Mission Jan Jose	Do.
694	1414	Port		J. M. Curtis & Son, San Francisco.[1]
695	1415	do		Do.
696	1416	do		Do.
697	1417	do		Do.
698	1418	Claret		Do.
699	1419	Burgundy		Do.
700	1420	Zinfandel		Do.
701	1503	White wine	Sonoma Hills	Do.
702	1504	Traminer	Sonoma Valley	Do.
703	1505	Burgundy	Santa Cruz Mountains	Do.
704	1506	Claret	Napa Valley	Do.
705	1507	Burger	Santa Clara	Do.
706	1508	Zinfandel	Santa Cruz Mountains	Do.
707	3041	Red wine, 1892	Mission San Jose	Do.
708	3042	Zinfandel, 1893		Do.
709	3043	Verdal, 1893		Do.
710	3044	Sweet sherry, 1892		Do.
711	3045	Red wine, 1895	Windsor	Do.
712	3747	Semillon, 1896	St. Helena	Do.
713	3050	Zinfandel, 1896	Irvington	Do.
714	3074	Zinfandel, 1893	Napa	Do.
715	3075	Beclan, 1893	do	Do.

IOWA WINES.

716	28	Port	White Elk Vineyards, Keokuk	Peter Collier.[2]
717	29	White Concord, 1875	do	Do.
718	30	Iowa, 1871	do	Do.
719	31	Concord, 1873	do	Do.
720	32	Norton's Virginia, 1875	do	Do.
721	33	Clinton, 1872	do	Do.
722	34	St. Julien	do	Do.
723	35	La Rose	do	Do.
724	36	Claret, 1874	do	Do.
725	133	Concord, 1873	do	Do.
726	134	White Concord, 1875	do	Do.
727	135	Norton's Virginia, 1875	do	Do.
728	136	Ives, 1874	do	Do.
729	137	Clinton, 1872	do	Do.

KENTUCKY WINES.

730	3817	Concord	Thos. R. Walker, Junction City	A. M. Peter.[3]
731	.....	Catawba	Made in laboratory.	Robert Peter.[4]
732	.....	do	N. L. Langworth	Do.
733	.....	Herbemont	do	Do.

MISSOURI WINES.

734	88	Imperial Champagne	Isaac Cook's American Wine Co., St. Louis.	Peter Collier.[2]
735	89	Concord	do	Do.
736	90	Virginia Seedling	do	Do.
737	91	Claret	do	Do.
738	92	Burgundy	do	Do.

[1] Unpublished. Inserted here by courtesy of Mr. Marvin Curtis, San Francisco, Cal.
[2] Published in Annual Report, United States Department of Agriculture, 1880.
[3] Annual Report Kentucky Experiment Station, 1897.
[4] Report of Kentucky Geological Survey, 1861.

Description of samples of American wines analyzed—Continued.

MISSOURI WINES—Continued.

No.	Laboratory No.	Variety.	Source.	Analyst.
739	93	Missouri Catawba	Isaac Cook's American Wine Co., St. Louis.	Peter Collier, United States Department of Agriculture.
740	101	Imperial Champagne	do	Do.
741	155	Ives Seedling, 1880	Poeschel, Scherer & Co., Herrmann, Gasconade County.	Do.
742	156	Riesling, 1880	do	Do.
743	157	Cynthiana, 1880	do	Do.
744	158	Clinton, 1880	do	Do.
745	159	Ruländer, 1880	do	Do.
746	160	Virginia Seedling, 1880	do	Do.
747	161	Delaware, 1880	do	Do.
748	162	Concord, 1880	do	Do.
749	163	Herbemont, 1880	do	Do.
750	164	Catawba, 1880	do	Do.
751	165	Taylor, 1880	do	Do.
752	166	Goethe, 1880	do	Do.

NEW JERSEY WINES.

753	15	Black Rose	Charles Saalmann, Egg Harbor City, N. J.	
754	74	Ruby Claret, 1875	J. H. Bannihr, Egg Harbor City, N. J.	
755	75	Ruby Claret, 1876	do	
756	76	Ruby Claret, 1877	do	
757	77	Ruby Claret, 1878	do	
758	78	Ruby Claret, 1879	do	
759	79	Ruby Claret, 1880	do	
760	80	Clevener, 1876	do	
761	81	Cynthiana, 1876	do	
762	82	Franklin, 1876	do	
763	83	Norton's Virginia, 1877	do	
764	84	Franklin, 1868	Julius Hincke, Egg Harbor City, N. J.	
765	85	Jersica, 1868	do	
766	86	Catawba, 1868	do	
767	87	Iolhink, 1868	do	

NEW MEXICO WINES.

768	128	Native wine, 1877	L. & H. Huning, Los Lunas, N. Mex.	

NEW YORK WINES.

769	24	Great Western Extra Dry Champagne.	Pleasant Valley Wine Co., Reims, N. Y.	
770	40	American Port	do	
771	44	Sweet Catawba	do	
772	45	Dry Catawba	do	
773	129	Port	do	
774	130	Dry Catawba	do	
775	131	Sweet Catawba	do	
776	132	Great Western Champagne	do	
777	184	Sweet Catawba	do	

NORTH CAROLINA WINES.

778	94	Norton's Virginia Claret, 1880.	W. J. Green, Fayetteville, N. C	
779	95	Sweet Delaware, 1879	do	
780	96	Sweet Concord, 1880	do	
781	97	Dry Concord	do	
782	98	"Scuppernong," 1880	do	
783	99	"Scuppernong" sweet, 1878	do	
784	100	"Scuppernong" dry, 1879	do	

OHIO WINES.

785	.....	Concord	Made in laboratory of Case School of Applied Science.	Smith & Parks.[1]
786	.....	Ives	do	Do.
787	.....	Hayse	do	Do.
788	.....	Catawba No. 1	do	Do.

[1] Published in Journal American Chemical Society, 1898, 20, 880.

Description of samples of American wines analyzed—Continued.

OHIO WINES—Continued.

No.	Laboratory No.	Variety.	Source.	Analyst.
789	.....	Catawba No. 2	Made in laboratory of Case School of Applied Science.	Smith & Parks.
790	.....	Catawba No. 3	.....do	Do.
791	.....	Centennial	.....do	Do.
792	.....	Werden	.....do	Do.
793	.....	Hartford	.....do	Do.
794	.....	Delaware	.....do	Do.
795	.....	Riesling	.....do	Do.
796	.....	Niagara	.....do	Do.
797	27	Gold Seal Champagne	Urbana Wine Co.	Peter Collier, United States Department of Agriculture.[1]
798	55	Sans Pareil Champagne	Wm. H. Mills, Sandusky	Do.
799	118	"AA" Catawba	Wehrle, Werk & Co., Middle Bass Island.	Do.
800	119	"AAA" Catawba	.....do	Do.
801	120	J. & N., 1880	.....do	Do.
802	121	Norton, 1880	.....do	Do.
803	122	Ives, 1880	.....do	Do.
804	123	Delaware	.....do	Do.
805	124	Concord, 1880	.....do	Do.
806	167	Sans Pariel Champagne	Wm. H. Mills, Sandusky	Do.
807	168	La Diamant	.....do	Do.
808	169	Norton's Va. Red Champagne	.....do	Do.

VIRGINIA WINES.

No.	Laboratory No.	Variety.	Source.	Analyst.
809	1	Virginia Claret, Alvey grape.	Monticello Wine Co., Charlottesville.	R. N. Cooper.[2]
810	2	Virginia Hock, Concord grape.	.....do	Do.
811	3	Bacchantes, Concord grape	Laurel Hill Vineyard, Norfolk County.	Do.
812	4	Concord (claret)	Belmont Vineyard, Front Royal	Do.
813	5	Sweet Concord	Laurel Hill Vineyard, Norfolk County.	Do.
814	6	Ives (claret), Ives grape	Belmont Vineyard, Front Royal	Do.
815	7	Delaware, Delaware grape	Monticello Wine Co., Charlottesville.	Do.
816	8	Sweet Delaware, Delaware grape,	Laurel Hill Vineyard, Norfolk County.	Do.
817	9	Delaware (Hock), Delaware grape.	Belmont Vineyard, Front Royal	Do.
818	10	Catawba (Hock), Catawba grape.	.....do	Do.
819	11	Norton's, Norton's Virginia grape.	Monticello Wine Co., Charlottesville.	Do.
820	12	Dry Norton's Virginia, Norton's Virginia grape.	Laurel Hill Vineyard, Norfolk County.	Do.
821	16	Virginia Claret, 1879	Monticello Wine Co., Charlottesville.	Peter Collier, United States Department of Agriculture.[1]
822	17	Virginia Clinton, 1879	.....do	Do.
823	18	Cynthiana, 1880	.....do	Do.
824	19	Alvey, 1880	.....do	Do.
825	20	Norton's Virginia, 1879	.....do	Do.
826	21	Virginia Hock, 1879	.....do	Do.
827	22	Ives Seedling, 1879	.....do	Do.
828	56	"Old Dominion" Claret	C. A. Heineken, Haymarket	Do.
829	59	Concord, 1880	Chr. Xander	Do.
830	60	Clinton, 1880	.....do	Do.
831	61	Ives, 1880	.....do	Do.
832	62	Norton's Virginia Seedling, 1880.	.....do	Do.
833	63	Ives and Clinton, 1880	.....do	Do.
834	64	Ives and Clinton, 1879	.....do	Do.
835	65	Concord and Clinton, 1879	.....do	Do.
836	125	Mount Vernon	C. A. Heineken, Haymarket	Do.
837	126	"Old Dominion" Claret	.....do	Do.
838	127	Prince William	.....do	Do.
839	178	Catawba, 1880	Fritz Baier, Greenfield	Do.
840	180	Red Concord	.....do	Do.
841	181	Clinton	.....do	Do.
842	182	Norton's	.....do	Do.
843	5094	Claret	Wm. Hotopp, Charlottesville	C. A. Crampton.[3]
844	5099	.....do	F. Leng & Co., Charlottesville	Do.
845	5101	.....do	Mill Park Wine Co., Haymarket	Do.

[1] Published in Annual Report United States Department of Agriculture, 1880.
[2] Published in Chemical News, 1875, 32, 160.
[3] Published in Bul. No. 13, part 3, Division of Chemistry, United States Department of Agriculture.

Analyses of samples of American wine.

ARKANSAS WINES.

No.	Laboratory No.	Variety.	Age of wine.	Specific gravity.	Per cent alcohol by volume.	Grams per 100 cc.		Glycerol-alcohol ratio.	Grams per 100 cc.		Ash-extract ratio.	Grams per 100 cc.				Volatile-acid-total-acid ratio.	Polarization.	Grams per 100 cc.					
						Alcohol.	Glycerol.		Extract.	Ash.		Total acids.	Volatile acids.	Fixed acids.	Extract, rest.			Reducing sugar.	Sodium chloride.	Potassium sulphate.	Sulphurous acid.	Proteids.	Tannin and coloring matter.
1	.....	Hock	.....	1.0010	7.01	5.56	0.483	8.7 : 100	2.24	0.280	.1 : 5.4	0.730	.....	.....	1.270	.....	.....	0.400	.....	.....	.....	.....	.....
2	.....	Claret	.....	.9962	9.99	7.93	.521	6.6 : 100	2.45	.269	.1 : 4.4	.541	.....	.....	1.650	.....	.....	.359	.....	.....	.....	.....	.....

CALIFORNIA WINES.

RED WINES—BORDEAUX OR CLARET TYPE.

212	211	Malbeck, 1884	6 to 8 months.	0.9970	10.42	8.27	.....	.....	2.67	0.392	1 : 6.8	0.449	.....	.....	2.221	.....	.....	.....	.....	.....	.....	.....	0.100
592	1797	Malbeck, 1893	.....do.....	1.0020	9.27	7.36	.....	.....	3.81	.....	.....	.671	.....	.....	3.139	.....	.....	.....	.....	.....	.....	.....	.299
630	1917	.....do.....	.....do.....	.9960	12.20	9.67	.....	.....	3.29	.....	.....	.438	.....	.....	2.852	.....	.....	.....	.....	.....	.....	.....	.271
77	12705	Malbeck, 1891	2 years	.9963	13.04	10.35	0.588	5.7 : 100	3.35	.311	1 : 10.0	.619	.....	.....	2.492	.....	—1.5	0.339	0.0160	0.0995	.....	0.2989	.225
116	12744	Malbeck, 1888	5 years	.9966	11.34	9.00	.451	5.0 : 100	2.92	.276	1 : 10.6	.888	.....	.....	2.032	.....	—0.8	.100	.0170	.0830	.....	.5544	.232
213	212	Cabernet Franc, 1884	6 to 8 months.	.9930	12.00	9.53	.....	.....	2.82	.429	1 : 6.6	.477	.....	.....	2.343	.....	.....	.....	.....	.....	.....	.....	.035
214	213	.....do.....	.....do.....	.9955	10.58	8.39	.....	.....	2.12	.292	1 : 7.3	.604	.....	.....	1.516	.....	.....	.....	.....	.....	.....	.....	.070
259	294	Cabernet Franc, 1885	.....do.....	*.9970	11.00	8.73	.....	.....	2.98	.269	1 : 11.1	.847	.....	.....	2.133	.....	.....	.....	.....	.....	.....	.....	.123
673	2070	Cabernet Franc, 1893	.....do.....	.9960	12.36	9.81	.....	.....	3.14	.....	.....	.359	.....	.....	2.781	.....	.....	.....	.....	.....	.....	.....	.261
215	214	Cabernet Sauvignon, 1884.	.....do.....	.9945	12.36	9.81	.....	.....	3.17	.445	1 : 7.1	.537	.....	.....	2.633	.....	.....	.....	.....	.....	.....	.....	.078
433	1342	Cabernet Sauvignon, 1890.	.....do.....	.9970	11.36	9.01	.....	.....	2.78	.....	.....	.399	.....	.....	2.381	.....	.....	.....	.....	.....	.....	.....	.251
574	1765	Cabernet Sauvignon, 1892.	.....do.....	.9950	10.83	8.59	.....	.....	2.84	.....	.....	.627	.....	.....	2.213	.....	.....	.....	.....	.....	.....	.....	.198
628	1914	Cabernet Sauvignon, 1893.	.....do.....	.9955	11.64	9.23	.....	.....	3.09	.229	1 : 13.5	.458	.....	.....	2.632	.....	.....	.....	.....	.....	.....	.....	.....
21	12645	Sauvignon Cabernet	.....do.....	.9943	12.39	9.83	.330	3.4 : 100	2.66	.352	1 : 7.6	.819	.....	.....	1.841	.....	—2.1	.040	.0141	.1328	.....	.3667	.167
59	12687	Cabernet Sauvignon Medoc.	.....do.....	.9940	12.51	9.93	.562	5.7 : 100	2.59	.240	1 : 10.7	.590	.....	.....	1.981	.....	—0.7	.119	.0100	.0875	.....	.2610	.167
165	12796	Cabernet-Sauvignon	.....do.....	.9938	12.99	10.32	.463	4.5 : 100	2.42	.287	1 : 8.4	.524	.....	.....	1.896	.....	—1.5	.109	.0081	.0814	.....	.2299	.291
261	344	Pfeffer's Cabernet, 1885	.....do.....	.9972	11.00	8.73	.....	.....	2.98	.273	1 : 10.9	.844	.....	.....	2.136	.....	.....	.....	.....	.....	.....	.....	.123
265	350	.....do.....	.....do.....	.9940	13.00	10.32	.....	.....	2.67	.288	1 : 9.3	.513	.....	.....	2.167	.....	.....	.....	.....	.....	.....	.....	.101

268	356	.....do	.....do	.9970	10.17	8.07			2.68	.365	1 : 7.3	.485			2.19									.166
18	12642	Cabernet		.9942	11.37	9.69	.481	5.0 : 100	2.57	.324	1 : 7.9	.805			1.765		—2.0	.099	.0127				.3480	.145
37	12661	.....do		.9939	12.74	10.12	.423	4.2 : 100	2.65	.325	1 : 8.2	.664			1.986		—1.1	.089	.0101	.0825			.2982	.153
45	12669	.....do		.9958	12.39	9.84	.567	5.8 : 100	3.04	.305	1 : 9.2	.806			2.105		—1.7	.229	.0087	.1173			.3112	.191
62	12690	.....do		.9934	13.00	10.32	.596	5.8 : 100	2.66	.252	1 : 10.4	.685			1.946		—1.5	.129	.0074	.0670			.2359	.262
76	12704	Cabernet, 1890	3 years	.9974	15.09	11.97	.553	4.6 : 100	2.58	.222	1 : 11.4	.741			1.799		—1.0	.140	.0080	.0735			.3055	.178
84	12712	Cabernet		.9951	13.30	10.56	.623	5.9 : 100	3.04	.264	1 : 10.8	.551			2.340		—1.1	.249	.0062	.0470			.3297	.236
95	12723	.....do		.9947	12.71	10.23	.511	5.0 : 100	2.95	.314	1 : 9.4	.671			2.279		—1.8	.099	.0086	.1018			.5036	.199
118	12746	Cabernet, 1888	5 years	.9980	11.11	8.82	.550	6.2 : 100	3.36	.306	1 : 10.8	.835			2.485		—1.1	.140	.0153	.1193			.4366	.193
132	12762	Cabernet, 1885	8 years	.9942	11.32	8.99	.554	6.2 : 100	2.52	.254	1 : 9.8	.691			1.790		—1.0	.139	.0113	.0653			.2300	.225
133	12763	Cabernet, 1886	7 years	.9948	11.32	8.99	.530	5.9 : 100	2.58	.255	1 : 10.0	.618			1.933		—0.6	.129	.0105	.0565			.1865	.249
149	12779	Cabernet, 1890	3 years	.9940	13.68	10.90	.644	5.9 : 100	2.69	.313	1 : 8.4	.578			2.053		—1.0	.159	.0061	.1535			.2548	.240
151	12782	Cabernet		.9959	13.02	10.34	.569	5.5 : 100	3.30	.350	1 : 8.9	.518			2.603		—1.6	.279	.0125	.1148			.4979	.269
																	—1.3		.0098	.0932				
32	12656	Cabernet El Quito	6 to 8 months	.9956	12.39	9.84	.852	8.7 : 100	3.07	.321	1 : 9.6	.713			2.357		—1.8		.0045	.1114			.3484	.273
216	215	Merlot, 1884	.....do	.9915	11.42	9.07			2.42	.391	1 : 6.2	.463			1.957									.064
270	361	Merlot, 1885	.....do	.9988	11.45	9.10			2.69	.310	1 : 8.7	.420			2.270									.121
217	216	Verdot, 1884	.....do	.9900	11.82	9.39			2.74	.405	1 : 6.8	.434			2.306									.071
391	1250	Verdot, 1890	.....do	*.9961	12.09	9.59			3.07			.568			2.502									.277
445	1382	.....do	.....do	.9960	12.36	9.81			3.31			.388			2.922									.319
523	1592	Verdot, 1891	.....do	.9960	11.91	9.46			3.19			.488			2.702									.290
404	1276	Gamai Teinturier, 1890	.....do	*.9949	11.45	9.10			2.57			.517			2.053									.201
518	1580	Gamai Teinturier, 1891	.....do	.9930	13.73	10.90			2.68			.496			2.184									.305
559	1684	Gamai Teinturier, 1892	.....do	.9975	11.82	9.39			2.09			.858			2.232									.231
604	1866	Gamai Teinturier, 1893	.....do	.9980	10.58	8.39			2.94			.549			2.391									.122
379	1205	Teinturier, 1890	.....do	*.9970	11.64	9.24			3.19			.379			2.811									.209
408	1283	.....do	.....do	*.9966	12.36	9.81			3.27			.319			2.951									.358
409	1292	.....do	.....do	.9955	11.64	9.24			2.77			.368			2.402									.309
483	1497	Teinturier, 1891	.....do	1.0000	10.00	7.94			3.05			.530			2.520									.100
498	1521	.....do	.....do	.9965	12.13	9.62			3.04			.588			2.452									.310
218	217	Tannat, 1884	.....do	.9958	8.92	7.09			2.68	.352	1 : 7.6	.630			2.050									.170
416	1302	Tannat, 1890	.....do	.9950	13.27	10.54			3.48			.388			3.092									.236
572	1761	Tannat, 1892	.....do	.9970	11.64	9.24			3.24			.498			2.742									.258
625	1911	Tannat, 1893	.....do	.9953	12.00	9.53			3.28			.587			2.693									.258
406	1281	St. Macaire, 1890	.....do	*.9983	10.17	8.07			3.07			.529			2.541									.294
410	1295	.....do	.....do	.9970	11.18	8.87			2.81			.508			2.302									.224
494	1515	St. Macaire, 1891	.....do	.9920	13.27	10.54			2.58			.496			2.084									.299
564	1706	St. Macaire, 1892	.....do	.9990	10.08	7.99			3.17			.784			2.386									.307
598	1846	St. Macaire, 1893	.....do	1.0000	10.42	8.27			3.30			.520			2.780									.259
670	2063	.....do	.....do	.9970	11.91	9.46			3.29			.618			2.672									.242
597	1844	Charbono	.....do	1.0000	9.54	7.57			3.20			.490			2.710									.141
640	1934	.....do	.....do	.9980	10.58	8.39			3.09			.409			2.681									.218
[1]704	1506	Claret[2]		.9955			.404		2.48	.224	1 : 11.1	.597	.134	.430	1.883								.361	.331
698	1418	.....do		.9958	12.70	10.08			3.16	.355	1 : 8.9	.739			2.421						.087			.299
9	12633	.....do		.9985	11.92	9.46	.566	6.0 : 100	2.36	.271	1 : 6.8	.768			1.064		—1.7	.628	.0111					
11	12635	.....do		.9943	12.21	9.69	.545	5.6 : 100	2.58	.321	1 : 8.0	.610			1.951		—1.0	.119						
49	12674	.....do		.9945	12.06	9.58	.521	5.4 : 100	2.75	.263	1 : 10.4	.725			2.006		—1.0	.119	.0082					
65	12693	Claret, 1889	4 years	.9939	12.53	9.95	.544	5.5 : 100	2.55	.253	1 : 10.0	.631			1.890		—1.0	.129	.0068					
75	12703	Claret, 1890	3 years	.9960	12.55	9.96	.494	5.0 : 100	3.31	.263	1 : 8.3	.753			2.438		—0.5	.219	.0119					
91	12719	Claret		.9953	11.48	9.12	.452	5.0 : 100	2.43	.340	1 : 7.1	.779			1.622		—0.5	.129	.0077					

*Specific gravity calculated from alcohol and extract.

[1] Undetermined extract, 0.794 gram per 100 cc.

[2] The term claret as ordinarily employed in this country means any red wine.

Analyses of samples of American wine—Continued.

CALIFORNIA WINES—Continued.

RED WINES—BORDEAUX OR CLARET TYPE—Continued.

No.	Laboratory No.	Variety.	Age of wine.	Specific gravity.	Per cent. alcohol by volume.	Grams per 100 cc.		Glycerol-alcohol ratio.	Grams per 100 cc.		Ash-extract ratio.	Grams per 100 cc.				Volatile-acid-total-acid ratio.	Polarization.	Grams per 100 cc.					
						Alcohol.	Glycerol.		Extract.	Ash.		Total acids.	Volatile acids.	Fixed acids.	Extract, rest.			Reducing sugar.	Sodium chloride.	Potassium sulphate.	Sulphurous acid.	Proteids.	Tannin and coloring matter.
94	12722	Claret		.9942	12.21	9.68	0.522	5.4 : 100	2.83	0.250	1 : 11.3	0.752			2.078		−1.5	0.099	0.0114				
105	12733	do		.9934	12.74	10.11	.533	5.3 : 100	2.55	.303	1 : 8.3	.697			1.824		−0.7	.129					
150	12781	do		.9984	14.07	11.21	.601	5.4 : 100	2.99	.282	1 : 10.1	.674			2.186		−0.3	.230	.0089				
157	12788	Claret, 1886	7 years	.9934	13.39	10.63	.616	5.8 : 100	2.86	.258	1 : 10.6	.631			2.101		−0.6	.228	.0105				
177	12808	Claret, 1887	6 years	.9936	13.64	10.83	.616	5.7 : 100	2.87	.293	1 : 9.9	.597			2.244		−1.3	.129	.0117				
178	12809	Claret, 1888	5 years	.9940	14.06	11.16	.566	4.8 : 100	2.78	.296	1 : 9.4	.678			2.102		−1.3	.099	.0089				
179	12810	Claret, 1889	4 years	.9936	13.27	10.53	.602	5.7 : 100	2.87	.303	1 : 9.4	.651			2.210		−1.2	.109	.0135				
127	12757	Haut Medoc, 1890	3 years	.9935	11.75	9.33	.415	4.4 : 100	2.49	.299	1 : 8.3	.819			1.671		−1.0	.040	.0066	.0580		.3602	.188
128	12758	Haut Medoc, 1891	2 years	.9936	11.91	9.46	.369	3.9 : 100	2.31	.333	1 : 6.9	.617			1.693		−1.2	.099	.0082	.0565		.2360	.279
172	12803	Chateau Margaux, 1889	4 years	.9953	12.40	9.94	.553	5.6 : 100	2.91	.384	1 : 7.5	.611			2.260		−0.8	.139	.0070	.1193		.2427	.292
56	12684	Chateau Gundlach		.9946	12.52	9.94	.633	6.4 : 100	2.88	.292	1 : 9.5	.104			2.677		−1.0	.199	.0087	.1570		.3046	.198
192	12824	La Loma, 1886	7 years	.9945	11.74	9.82	.550	5.6 : 100	2.66	.270	1 : 9.5	.624			1.937		−1.2	.199	.0096	.0766		.3108	.166
8	12632	Margaux		.9930	12.32	9.78	.497	5.1 : 100	2.15	.209	1 : 10.3	.711			1.439		−1.3		.0141	.0700		.2855	.149
159	12790	Chateau Mouton		.9939	13.13	10.43	.566	5.4 : 100	2.91	.300	1 : 9.7	.691					−1.5					.3116	.177

RED WINES—RHINE TYPE.

422	1313	Affenthaler, 1890	6 to 8 months.	0.9950	11.00	8.73			2.69			0.358			2.332								0.228
456	1417	do	do	.9940	13.82	10.96			3.06			.477			2.583								.311
468	1460	Affenthaler, 1891	do	.9970	12.09	9.59			3.34			.489			2.851								.349
521	1583	do	do	.9960	11.91	9.46			3.04			.538			2.502								.349
590	1793	Affenthaler, 1892	do	.9970	11.27	8.94			2.64			.718			1.922								.211
652	1984	Affenthaler, 1893	do	.9950	11.64	9.24			3.08			.657			2.423								.289

Red Wines—Red Burgundy Type.

267	354	Burgundy, 1885	6 to 8 months.	0.9950	12.00	9.53			3.05	0.225	1 : 13.6	0.552			2.498									0.070
222	221	Black Burgundy, 1884	do	.9960	11.64	9.24			2.76	.276	1 : 10.0	.762			1.998									.187
223	222	Black Pinot, 1884	do	.9955	8.00	6.35			2.10	.203	1 : 6.8	.747			1.353									.132
262	345	Black Pinot, 1885	do	.9950	8.00	6.35			2.19	.213	1 : 10.3	.522			1.668									.040
641	1953	Robin Noir, 1893	do	.9945	12.09	9.59			2.59			.408			2.182									.146
224	223	Meunier, 1884	do	.9930	12.55	9.96			2.53	.416	1 : 6.2	.521			2.009									.025
225	224	do	do	.9922	8.64	6.86			2.42	.283	1 : 8.6	.617			1.803									.055
[1]703	1505	Burgundy		.9941	13.12	10.40	0.656	6.3 : 100	2.74	.257	1 : 10.7	.627	0.179	0.403	2.113	1 : 3.5							0.280	.285
699	1419	do		.9954	13.42	10.64			3.27	.300	1 : 10.9	.694										0.0527		.328
13	12637	do		.9962	11.48	9.11	.638	7.0 : 100	2.79	.334	1 : 8.4	.679			2.111		—1.0	0.030		.0840		.3860		.257
24	12648	do		.9961	12.40	9.84	.514	5.2 : 100	2.98	.264	1 : 11.0	.719			2.192		—1.0	.169	0.0089	.0930		.2864		.229
35	12659	do		.9938	12.22	9.71	.577	5.9 : 100	2.47	.274	1 : 9.6	.658			1.812		—0.8	.070	.0109	.0923		.2050		.239
43	12667	do		.9934	11.94	9.48	.526	5.5 : 100	2.74	.251	1 : 10.9	.677			2.063		—0.5	.099	.0111	.0965		.2608		.246
48	12673	do		.9951	11.92	9.46	.482	5.1 : 100	2.58	.244	1 : 10.5	.713			1.848		—0.8	.119	.0082	.0455		.2177		.155
60	12688	do		.9950	14.07	11.16	.654	5.6 : 100	3.07	.281	1 : 10.7	.672			2.329		—1.0	.169	.0090	.1005		.2985		.243
61	12689	Chambertin Burgundy		.9952	15.48	12.29	.621	5.1 : 100	3.46	.307	1 : 10.2	.672			2.470		—1.5	.418	.0171	.0998		.2924		.250
67	12695	Burgundy, 1889	4 years	.9941	12.58	9.99	.521	5.2 : 100	2.61			.671			1.920		—0.7	.119				.1864		.177
79	12707	Burgundy, 1888	5 years	.9976	10.97	8.66	.569	6.6 : 100	3.06	.277	1 : 10.7	.781			2.190		—1.0	.189		.0708		.4437		.182
86	12714	Burgundy		.9951	12.88	10.23	.636	6.2 : 100	3.09	.361	1 : 8.4	.672			2.359		—1.7	.159	.0070	.2515		.4482		.155
89	12717	do		.9941	11.57	9.13	.461	5.0 : 100	2.47	.310	1 : 7.9	.778			1.673		—1.0	.119	.0070	.0928		.2673		.155
90	12718	do		.9911	12.93	10.27	.496	4.8 : 100	2.18	.188	1 : 11.6	.662			1.518		—1.0	.050	.0040	.0603		.2293		.033
104	12732	do		.9922	13.76	10.32	.487	4.7 : 100	2.43	.265	1 : 9.1	.670			1.741		—0.8	.119	.0199	.0613		.2047		.191
117	12745	Burgundy, 1891	2 years	.9959	14.09	11.19	.526	4.7 : 100	3.24	.301	1 : 10.5	.760			2.391		—1.5	.189	.0199	.0740		.3050		.174
152	12783	Burgundy		.9936	13.13	10.42	.558	5.4 : 100	2.72	.324	1 : 8.2	.590			2.071		—1.1	.159	.0113	.0910		.3043		.166
193	12825	do		.9952	9.66	7.67	.509	6.6 : 100	2.48	.242	1 : 9.8	.665			1.696		—1.2	.219				.3483		.129

Red Wines—Jura type.

385	1242	Sirah, 1890	6 to 8 months.	*.9944	12.36	9.81			2.68			0.477			2.203									0.243
411	1296	do	do	.9970	12.46	9.89			3.44			.449			2.991									.258
432	1341	do	do	.9940	13.00	10.32			3.30			.378			2.922									.299
477	1472	Sirah, 1891	do	.9967	12.36	9.81			3.34			.429			2.911									.239
505	1564	do	do	.9930	15.20	12.06			3.18			.427			2.753									.408
566	1708	Sirah, 1892	do	.9965	11.55	9.17			2.94			.698			2.242									.334
594	1814	Sirah, 1893	do	.9975	10.36	8.22			3.19			.509			2.681									.141
615	1895	do	do	.9958	12.36	9.81			3.29			.498			2.792									.210
678	2076	do	do	.9950	13.36	10.61			3.29			.667			2.623									.255
685	2139	Sirah, 1894	do	*.9965	11.00	8.73			2.84			.438			2.402									.158
230	232	Petite Sirah, 1884	do	.9925	12.54	9.95			2.63	0.403	1 : 6.5	.398												.091
231	233	do	do	.9925	13.57	10.77			2.77	.336	1 : 8.2	.390												.107
232	235	Mondeuse, 1884	do	.9930	11.89	9.45			2.62	.340	1 : 7.7	.495			2.125									.172
233	236	do	do	.9945	12.27	9.73			2.82	.360	1 : 7.8	.402			2.418									.140
421	1312	Mondeuse, 1890	do	.9950	9.73	7.72			2.69			.448			2.242									.293
429	1334	do	do	.9950	11.00	8.73			2.56			.498			2.062									.293

*Specific gravity calculated from alcohol and extract.

[1] Undetermined extract, 1.434 grams per 100 cc.

Analyses of samples of American wine—Continued.

CALIFORNIA WINES—Continued.

RED WINES—JURA TYPE—Continued.

No.	Laboratory No.	Variety.	Age of wine.	Specific gravity.	Per cent alcohol by volume.	Grams per 100 cc.		Glycerol-alcohol ratio.	Grams per 100 cc.		Ash-extract ratio.	Grams per 100 cc.				Volatile-acid–total-acid ratio.	Polarization.	Grams per 100 cc.					
						Alcohol.	Glycerol.		Extract.	Ash.		Total acids.	Volatile acids.	Fixed acids.	Extract, rest.			Reducing sugar.	Sodium chloride.	Potassium sulphate.	Sulphurous acid.	Proteids.	Tannin and coloring matter.
504	1563	Mondeuse, 1891	6 to 8 months.	0.9932	11.09	9.00	.....	.....	2.28	.....	.....	0.526	.....	.....	1.754	.....	.....	.....	.....	.....	.....	.....	0.257
520	1582	.....do.....	.....do.....	.9935	11.45	9.10	.....	.....	2.68	.....	.....	.427	.....	.....	2.253	.....	.....	.....	.....	.....	.....	.....	.270
526	1595	.....do.....	.....do.....	.9940	12.18	9.66	.....	.....	3.33	.....	.....	.497	.....	.....	2.833	.....	.....	.....	.....	.....	.....	.....	.373
573	1764	Mondeuse, 1892	.....do.....	.9950	9.73	7.72	.....	.....	2.59	.....	.....	.736	.....	.....	1.854	.....	.....	.....	.....	.....	.....	.....	.373
613	1888	Mondeuse, 1893	.....do.....	.9950	9.73	7.72	.....	.....	2.28	.....	.....	.458	.....	.....	1.822	.....	.....	.....	.....	.....	.....	.....	.254
635	1922	.....do.....	.....do.....	.9975	10.25	8.13	.....	.....	3.29	.....	.....	.698	.....	.....	2.592	.....	.....	.....	.....	.....	.....	.....	.195
669	2062	.....do.....	.....do.....	.9940	10.36	8.22	.....	.....	2.58	.....	.....	.616	.....	.....	1.964	.....	.....	.....	.....	.....	.....	.....	.299
169	12800	Mondeuse, 1890	3 years	.9952	11.14	9.83	0.586	6.0 : 100	2.49	0.228	1 : 10.9	.578	.....	.....	1.912	.....	.....	.....	0.0097	0.0598	.....	0.2115	.125
525	1594	César	6 to 8 months.	.9950	13.54	10.75	.....	.....	3.33	.....	.....	.398	.....	.....	2.932	.....	.....	.....	.....	.....	.....	.....	.541
620	1902	Tinta Caldepeñas, 1893	.....do.....	.9960	11.91	9.46	.....	.....	3.59	.....	.....	.478	.....	.....	3.112	.....	.....	.....	.....	.....	.....	.....	.261
637	1924	.....do.....	.....do.....	.9950	11.82	9.39	.....	.....	3.08	.....	.....	.557	.....	.....	2.523	.....	.....	.....	.....	.....	.....	.....	.204
47	12672	Hermitage	.....	.9943	13.01	10.33	.527	5.1 : 100	2.89	.295	1 : 9.8	.740	.....	.....	2.150	.....	−1.0	.....	.0080	.0903	.....	.2862	.118

RED WINES—SOUTHERN FRENCH TYPE.

715	3075	Beclan, 1893	6 to 8 months.	0.9942	12.69	10.07	.....	.....	2.74	0.253	1 : 10.8	0.544	0.095	0.425	2.196	1 : 5.7	.....	.....	.....	.....	0.0011	.....	.....
235	238	Aramon, 1884	.....do.....	.9925	10.73	10.10	.....	.....	2.30	.353	1 : 6.5	.492	.....	.....	1.908	.....	.....	.....	.....	.....	.....	.....	0.065
388	1246	Aramon, 1890	.....do.....	*.9967	10.58	8.39	.....	.....	2.81	.....	.....	.389	.....	.....	2.421	.....	.....	.....	.....	.....	.....	.....	.247
441	1377	.....do.....	.....do.....	.9945	11.45	9.10	.....	.....	2.57	.....	.....	.358	.....	.....	2.212	.....	.....	.....	.....	.....	.....	.....	.149
454	1414	.....do.....	.....do.....	.9940	12.18	9.66	.....	.....	2.80	.....	.....	.437	.....	.....	2.363	.....	.....	.....	.....	.....	.....	.....	.296
479	1474	Aramon, 1891	.....do.....	.9950	10.42	8.27	.....	.....	2.59	.....	.....	.438	.....	.....	2.152	.....	.....	.....	.....	.....	.....	.....	.209
548	1639	Aramon, 1892	.....do.....	.9942	11.00	8.73	.....	.....	2.64	.....	.....	.438	.....	.....	2.202	.....	.....	.....	.....	.....	.....	.....	.241
631	1918	Aramon, 1893	.....do.....	.9955	9.90	7.86	.....	.....	2.59	.....	.....	.468	.....	.....	2.122	.....	.....	.....	.....	.....	.....	.....	.146
234	237	Cinsaut, 1884	.....do.....	.9910	12.90	10.24	.....	.....	2.58	.372	1 : 6.9	.486	.....	.....	2.094	.....	.....	.....	.....	.....	.....	.....	.069
451	1408	Cinsaut, 1890	.....do.....	.9940	12.36	9.81	.....	.....	2.56	.....	.....	.408	.....	.....	2.152	.....	.....	.....	.....	.....	.....	.....	.121
460	1434	Cinsaut, 1891	.....do.....	.9982	12.00	9.53	.....	.....	3.79	.....	.....	.299	.....	.....	3.491	.....	.....	.....	.....	.....	.....	.....	.120
537	1614	Cinsaut, 1892	.....do.....	.9970	10.90	8.65	.....	.....	2.94	.....	.....	.469	.....	.....	2.471	.....	.....	.....	.....	.....	.....	.....	.103

588	1789	.....do	.....do	.9950	11.91	9.46			2.69			.497			2.193								.195
596	1842	Cinsaut, 1893	.....do	.9940	11.00	8.73			2.58			.487			2.093								.083
684	2138	Cinsaut, 1894	.....do	.9940	10.58	8.39			2.58			.417			2.163								.135
201	85	Grenache, 1883	.....do	.9905	11.90	9.45			2.66	.430	1 : 6.2	.523			2.137								.108
202	86	.....do	.....do	.9900	11.50	9.13			2.53	.321	1 : 7.9	.505			2.025								.086
237	240	Grenache, 1884	.....do	*.9923	10.58	8.39			1.67	.279	1 : 6.0	.476			1.194								.104
238	241	.....do	.....do	.9970	9.27	7.36			1.92	.276	1 : 7.0	.530			1.390								.065
390	1249	Grenache, 1890	.....do	.9958	12.09	9.59			3.01			.458			2.552								.152
501	1527	Grenache, 1891	.....do	.9955	12.09	9.59			2.54			.398			2.142								.179
542	1626	Grenache, 1892	.....do	.9960	11.73	9.31			2.89			.478			2.412								.171
571	1721	.....do	.....do	*.9962	11.27	8.94			2.84			.548			2.292								.145
664	2010	Grenache, 1893	.....do	.9930	13.54	10.75			2.83			.596			2.234								.222
687	2170	Grenache, 1894	.....do	.9930	12.91	10.25			2.83			.437			2.393								.149
397	1261	Ploussard, 1890	.....do	*.9954	12.18	9.66			2.94			.408			2.542								.114
489	1505	Ploussard, 1891	.....do	.9940	12.64	10.03			3.03			.417			2.613								.187
651	1983	Ploussard, 1893	.....do	*.9938	13.27	10.54			2.78			.606			2.174								.181
228	230	Trousseau, 1884	.....do	.9915	13.73	10.90			2.64	.376	1 : 7.0	.481			2.159								.075
229	231	.....do	.....do	*.9935	11.64	9.24			2.27	.347	1 : 6.5	.471			1.799								.050
378	1204	Trousseau, 1890	.....do	*.9955	11.00	8.73			2.59			.428			2.162								.084
466	1458	Trousseau, 1891	.....do	1.0050	[1]19.28	15.30			6.88			.201			6.679								.161
484	1498	.....do	.....do	.9935	12.18	9.66			2.68			.467			2.213								.065
491	1510	.....do	.....do	.9980	[1]18.03	14.30			4.99			.259			2.761			2.070					.200
567	1709	Bastardo, 1892	.....do	.9950	12.18	9.66			3.13			.388											.261
603	1865	Bastardo, 1893	.....do	.9955	11.48	9.11			2.79			.398											.150
210	95	Chauché Noir, 1883	.....do	.9930	11 64	9.24			2.04	.264	1 : 7.7	.521			1.519								.025
413	1298	Chauché Noir, 1890	.....do	.9920	13.27	10.54			2.43			.317			2.113								.....
605	1868	Chauché Noir, 1893	.....do	.9990	10.42	8.27			3.10			.559			2.541								.112
677	2075	.....do	.....do	*.9939	14.20	11.27			3.08			.398			2.682								.172
511	1572	Dolcetto, 1891	.....do	.9920	13.26	10.53			2.58			.436			2.144								.208
203	87	Carignane, 1883	.....do	.9920	11.00	8.73			1.91	.401	1 : 4.8	.576			1.334								.108
204	88	.....do	.....do	.9935	10.60	8.41			2.00	.355	1 : 5.6	.662			1.338								.086
220	219	Carignane, 1884	.....do	.9930	9.90	7.86			2.16	.283	1 : 7.6	.533			1.627								.063
392	1251	Carignane, 1890	.....do	*.9945	11.09	9.00			2.35			.477			1.873								.124
452	1409	.....do	.....do	.9960	12.64	10.03			3.29			.657			2.414			.319					.212
499	1525	.....do	.....do	.9925	12.54	9.95			2.76			.476			2.284								.238
515	1576	.....do	.....do	.9970	9.00	7.14			2.59			.479			2.121								.123
544	1628	Carignane, 1892	.....do	.9960	10.42	8.27			3.29			.558			2.732								.142
589	1791	.....do	.....do	.9965	10.36	8.22			2.99			.777			2.213								.208
612	1887	Carignane, 1893	.....do	.9970	9.90	7.86			2.59			.528			2.062								.070
680	2081	.....do	.....do	*.9968	12.18	9.66			3.29			.478			2.712								.153
689	2210	Carignane, 1894	.....do	.9950	10.42	8.27			2.59			.438			2.152								.145
126	12754	Carignane	.....	.9938	11.50	9.13	.471	5.2 : 100	2.27			.570			1.700		—0.8					.2236	.138
199	83	Mataro, 1883	6 to 8 months.	.9918	11.50	9.92			2.67	.481	1 : 5.6	.550			2.120								.076
200	84	.....do	.....do	.9910	11.60	9.91			2.11	.345	1 : 6.1	.461			1.649								.055
393	1252	Mataro, 1890	.....do	*.9948	10.58	8.39			2.31			.428			1.882								.103
395	1255	.....do	.....do	*.9949	11.45	9.10			2.57			.497			2.073								.155
513	1574	Mataro, 1891	.....do	.9930	12.09	9.59			2.33			.437			1.893								.128
527	1596	.....do	.....do	.9970	13.27	10.54			3.34			.818			2.522								.235
534	1609	.....do	.....do	.9930	10.75	8.53			2.53			.516			2.014								.142
535	1610	.....do	.....do	.9930	11.45	9.10			2.43			.546			1.884								.161
536	1611	.....do	.....do	.9950	11.45	9.10			2.54			.388			2.152								.254

*Specific gravity calculated from alcohol and extract. [1]Fortified.

Analyses of samples of American wine—Continued.

CALIFORNIA WINES—Continued.

RED WINES—SOUTHERN FRENCH TYPE—Continued.

No.	Laboratory No.	Variety.	Age of wine.	Specific gravity.	Per cent alcohol by volume.	Grams per 100 cc.		Glycerol-alcohol ratio.	Grams per 100 cc.		Ash-extract ratio.	Grams per 100 cc.				Volatile-acid-total-acid ratio.	Polarization.	Grams per 100 cc.					
						Alcohol.	Glycerol.		Extract.	Ash.		Total acids.	Volatile acids.	Fixed acids.	Extract, rest.			Reducing sugar.	Sodium chloride.	Potassium sulphate.	Sulphurous acid.	Proteids.	Tannin and coloring matter.
634	1921	Mataro, 1893	6 to 8 months.	0.9950	10.17	8.07			2.29			0.418			1.872								0.070
113	12741	Mataro		.9940	13.40	10.63	0.580	5.5 : 100	3.06	0.320	1 : 9.3	.631			2.350		−.38	0.179	0.18	0.0090		0.3727	.181
134	12764	Mataro, 1890	3 years	.9949	11.60	9.21	.565	6.1 : 100	2.23	.202	1 : 10.9	.605			1.606		−.06	.119	.12	.0074		.1244	.181
135	12765	Mataro, 1891	2 years	.9967	9.58	7.60	.548	7.2 : 100	2.39	.221	1 : 10.6	.599			1.741		−.06	.150	.15	.0093		.1495	.210
162	12793	Mataro		.9962	11.96	9.47	.542	5.7 : 100	3.38	.290	1 : 11.3	.834			2.447		−.39	.199	.20	.0101		.5791	.155
236	239	Mourastel, 1884	6 to 8 months.	.9948	9.88	7.84			2.59	.290	1 : 8.9	.550			2.040								.054
426	1326	Mourastel, 1890	do	.9970	9.45	7.50			2.31			.618			1.692								.099
428	1330	do	do	.9950	10.75	8.53			2.74			.517			2.223								.190
476	1471	Mourastel, 1891	do	.9950	10.17	8.07			2.69			.527			2.163								.167
510	1569	do	do	.9940	10.91	8.66			2.73			.517			2.213								.151
562	1690	Mourastel, 1892	do	.9950	10.67	8.46			2.79			.497			2.293								.142
618	1898	Mourastel, 1893	do	.9945	10.17	8.07						.467											.087
674	2071	do	do	.9940	11.91	9.46						.447											.165
676	2074	do	do	.9950	10.58	8.39						.726											.162
219	218	Beclan, 1884	do	.9957	11.00	8.73			2.63	.259	1 : 10.2	.378			2.252								.050
643	1967	Beclan, 1893	do	.9960	11.48	9.11			3.19			.438			2.752								.137
239	242	Petit Bouschet, 1884	do	*.9949	11.00	8.73			2.43	.233	1 : 10.4	.580			1.850								.089
240	243	do	do	.9940	11.55	9.17			2.85	.367	1 : 7.8	.490			2.360								.116
442	1378	Petit Bouschet, 1890	do	.9980	11.36	9.02			3.31			.369			2.941								.484
461	1435	Petit Bouschet, 1891	do	.9980	11.00	8.73			3.11			.449			2.661								.227
543	1627	Petit Bouschet, 1892	do	.9950	11.09	9.00			3.03			.497			2.533								.184
609	1882	Petit Bouschet, 1893	do	.9965	10.03	7.97			3.84			.518			3.322								.220
663	2009	do	do	.9950	11.91	9.46			3.08			.468			2.612								.478
686	2168	Petit Bouschet, 1894	do	.9950	10.58	8.39			2.84			.348			2.492								.297
691	2226	do	do	1.0000	8.07	6.40			3.30			.620			2.680								.266
693	2293	do	do	.9985	9.54	7.57			3.49			.489			3.001								.344
384	1241	Alicante Bouschet, 1890.	do	*.9960	11.27	8.94			2.81			.528			2.282								.213
519	1581	Alicante Bouschet, 1891.	do	.9960	11.91	9.46			3.04			.498			2.542								.396

514	1575	Nebliolo (Fino Bourguete), 1891.	6 to 8 months.	0.9910	13.54	10.75	.....	.....	3.17	.....	.....	0.495	.....	.....	2.675	.....	.....	.....	.....	.....	.....	.....	0.278
114	12742	Barola (Nebliolo)	.....	.9928	12.04	9.56	0.550	5.8 : 100	2.19	0.201	1 : 10.9	.738	.....	.....	1.452	.....	−0.2	0.099	0.0053	0.0567	.....	0.0931	.228
512	1573	Barbara, 1891	6 to 8 months.	.9935	14.20	11.27	.....	.....	3.23	.....	.....	.517	.....	.....	2.713	.....	.....	.....	.....	.....	.....	.....	.263
556	1675	Barbara, 1892	.....do	.9955	12.18	9.66	.....	.....	3.19	.....	.....	.557	.....	.....	3.633	.....	.....	.....	.....	.....	.....	.....	.123
639	1931	Barbara, 1893	.....do	.9965	11.91	9.46	.....	.....	3.39	.....	.....	.578	.....	.....	2.812	.....	.....	.....	.....	.....	.....	.....	.191
690	2211	Barbara, 1894	.....do	.9955	12.50	9.92	.....	.....	3.10	.....	.....	.518	.....	.....	2.582	.....	.....	.....	.....	.....	.....	.....	.203
25	12649	Barbara	.....	.9949	12.74	10.12	.680	6.7 : 100	3.02	.209	1 : 13.9	.813	.....	.....	2.098	.....	.....	.209	.0074	.0998	.....	.1990	.191
439	1362	Bonarda, 1890	6 to 8 months.	.9947	11.73	9.31	.....	.....	2.69	.....	.....	.318	.....	.....	2.372	.....	.....	.....	.....	.....	.....	.....	.398
447	1384	.....do	.....do	.9950	12.36	9.81	.....	.....	2.57	.....	.....	.597	.....	.....	1.973	.....	.....	.....	.....	.....	.....	.....	.285
528	1599	Bonarda, 1891	.....do	.9950	12.36	9.81	.....	.....	3.33	.....	.....	.826	.....	.....	2.504	.....	.....	.....	.....	.....	.....	.....	.354
606	1869	Bonarda, 1893	.....do	.9965	10.08	7.99	.....	.....	2.79	.....	.....	.568	.....	.....	2.222	.....	.....	.....	.....	.....	.....	.....	.133
427	1327	Freisa Di Monferrato, or Fresa, 1890.	.....do	[1].9960	12.18	9.66	.....	.....	3.07	.....	.....	.528	.....	.....	2.542	.....	.....	.....	.....	.....	.....	.....	.449
475	1469	Freisa Di Monferrato, or Fresa, 1891.	.....do	.9970	14.00	11.11	.....	.....	3.81	.....	.....	.499	.....	.....	3.311	.....	.....	.....	.....	.....	.....	.....	.....
529	1600	.....do	.....do	.9960	12.46	9.89	.....	.....	3.04	.....	.....	.627	.....	.....	2.413	.....	.....	.....	.....	.....	.....	.....	.438
627	1913	Freisa Di Monferrato, or Fresa, 1893.	.....do	.9940	12.00	9.53	.....	.....	2.78	.....	.....	.427	.....	.....	2.353	.....	.....	.....	.....	.....	.....	.....	.283
425	1318	Refosco, 1890	.....do	.9940	13.27	10.54	.....	.....	2.76	.....	.....	.417	.....	.....	2.343	.....	.....	.....	.....	.....	.....	.....	.243
434	1343	.....do	.....do	.9957	13.27	10.54	.....	.....	3.31	.....	.....	.448	.....	.....	2.862	.....	.....	.....	.....	.....	.....	.....	.263
482	1496	Refosco, 1891	.....	.9980	9.73	7.72	.....	.....	2.79	.....	.....	.299	.....	.....	2.491	.....	.....	.....	.....	.....	.....	.....	.169
495	1516	.....do	.....	.9940	12.09	9.59	.....	.....	3.02	.....	.....	.348	.....	.....	2.672	.....	.....	.....	.....	.....	.....	.....	.219
508	1526	.....do	.....	.9935	12.77	10.13	.....	.....	2.93	.....	.....	.408	.....	.....	2.522	.....	.....	.....	.....	.....	.....	.....	.292
522	1584	.....do	.....	.9965	12.00	9.53	.....	.....	3.44	.....	.....	.698	.....	.....	2.742	.....	.....	.....	.....	.....	.....	.....	.219
538	1615	Refosco, 1892	.....	.9960	9.90	7.88	.....	.....	3.04	.....	.....	.388	.....	.....	2.652	.....	.....	.....	.....	.....	.....	.....	.269
565	1707	.....do	.....	.9970	11.18	8.87	.....	.....	2.84	.....	.....	.489	.....	.....	2.351	.....	.....	.....	.....	.....	.....	.....	.228
587	1785	.....do	.....	.9965	11.27	8.94	.....	.....	2.79	.....	.....	.438	.....	.....	2.352	.....	.....	.....	.....	.....	.....	.....	.197
611	1884	Refosco, 1893	.....	.9960	9.90	7.88	.....	.....	2.84	.....	.....	.578	.....	.....	2.262	.....	.....	.....	.....	.....	.....	.....	.265
638	1930	.....do	.....	.9960	11.00	8.73	.....	.....	2.59	.....	.....	.418	.....	.....	2.172	.....	.....	.....	.....	.....	.....	.....	.267
688	2171	Refosco, 1894	.....	.9950	11.36	8.92	.....	.....	3.08	.....	.....	.507	.....	.....	2.573	.....	.....	.....	.....	.....	.....	.....	.290
458	1419	Lagrain, 1890	6 to 8 months.	.9950	15.50	12.31	.....	.....	3.80	.....	.....	.547	.....	.....	3.253	.....	.....	.....	.....	.....	.....	.....	.311
661	2002	Lagrain, 1893	.....do	1.0000	12.36	9.82	.....	.....	3.70	.....	.....	.850	.....	.....	2.850	.....	.....	.....	.....	.....	.....	.....	.272
386	1243	Gros Mansenc, 1890	.....do	*.9962	11.55	9.17	.....	.....	2.94	.....	.....	.588	.....	.....	2.352	.....	.....	.....	.....	.....	.....	.....	.179
405	1277	.....do	.....do	*.9955	11.64	9.24	.....	.....	2.81	.....	.....	.567	.....	.....	2.243	.....	.....	.....	.....	.....	.....	.....	.312
430	1339	.....do	.....do	.9960	11.45	9.10	.....	.....	2.81	.....	.....	.618	.....	.....	2.192	.....	.....	.....	.....	.....	.....	.....	.211
474	1468	Gros Mansenc, 1891	.....do	.9958	12.09	9.60	.....	.....	3.04	.....	.....	.548	.....	.....	2.492	.....	.....	.....	.....	.....	.....	.....	.199
503	1562	.....do	.....do	.9980	10.00	7.94	.....	.....	3.19	.....	.....	.948	.....	.....	2.242	.....	.....	.....	.....	.....	.....	.....	.274
575	1766	Gros Mansenc, 1892	.....do	.9980	9.73	7.72	.....	.....	3.18	.....	.....	1.110	.....	.....	2.070	.....	.....	.....	.....	.....	.....	.....	.242
620	1899	Gros Mansenc, 1893	.....do	.9980	12.36	9.82	.....	.....	3.59	.....	.....	.509	.....	.....	3.081	.....	.....	.....	.....	.....	.....	.....	.293
682	2083	.....do	.....do	.9950	11.45	9.10	.....	.....	2.84	.....	.....	.537	.....	.....	2.303	.....	.....	.....	.....	.....	.....	.....	.239
23	12647	Tipo Chianti	.....	.9959	10.71	8.50	.591	7.0 : 100	2.56	.248	1 : 10.3	.767	.....	.....	1.793	.....	−1.1	.....	.....	.....	.....	.1120	.226

[1] Specific gravity calculated from alcohol and extract.

Analyses of samples of American wine—Continued.

CALIFORNIA WINES—Continued.

RED WINES—AUSTRIAN AND HUNGARIAN TYPE.

No.	Laboratory No.	Variety.	Age of wine.	Specific gravity.	Per cent alcohol by volume.	Grams per 100 cc.		Glycerol-alcohol ratio.	Grams per 100 cc.		Ash-extract ratio.	Grams per 100 cc.				Volatile-acid–total-acid ratio.	Polarization.	Grams per 100 cc.					
						Alcohol.	Glycerol.		Extract.	Ash.		Total acids.	Volatile acids.	Fixed acids.	Extract, rest.			Reducing sugar.	Sodium chloride.	Potassium sulphate.	Sulphurous acid.	Proteids.	Tannin and coloring matter.
418	1307	Kadarkas, 1890	6 to 8 months.	0.9955	10.36	8.22			2.57			0.398			2.172								0.137
457	1418	do	do	.9960	12.82	10.18			3.57			.478			3.092								.232
654	1986	Kadarkas, 1893	do	.9970	9.90	7.86			3.09			.538			2.552								.370
221	220	Grossblaue, 1884	do	.9905	11.42	9.07			2.08	0.249	1 : 8.4	.566			1.514								.065
444	1381	Grossblaue, 1890	do	.9945	12.54	9.96			3.06			.338			2.722								.262
531	1604	Grossblaue, 1891	do	.9945	12.73	10.11			3.33			.467			2.863								.318
577	1768	Grossblaue, 1892	do	.9955	10.42	8.27			2.29			.528			1.762								.261
608	1881	Grossblaue, 1893	do	.9960	10.58	8.39			3.19			.588			2.602								.181
380	1206	Blue Portuguese, 1890	do	*.9979	19.96	15.84			3.18			.409			2.669			0.202					.160
398	1262	do	do	*.9943	12.00	9.53			2.57			.497			2.073								.216
540	1618	Blue Portuguese, 1892	do	.9975	11.45	9.10			3.57			.499			3.071								.127
558	1683	do	do	.9900	11.00	8.73			2.10			.495			1.605								.249
593	1813	Blue Portuguese, 1893	do	.9980	9.27	7.36			2.94			.409			2.531								.202
595	1815	do	do	.9990	9.73	7.72			3.00			.470			2.530								.134
653	1985	do	do	.9930	14.20	11.27			3.28			.467			2.813								.397
683	2137	Blue Portuguese, 1894	do	1.0000	11.50	9.13			4.35			.570			3.780								.229
205	90	Zinfandel, 1883	do	.9950	10.60	8.41			2.04	.265	1 : 7.7	.806			1.234								.035
206	91	do	do	.9938	13.70	10.87			2.67	.294	1 : 9.1	.432			2.238								.050
226	226	Zinfandel, 1884	do	.9949	9.75	7.74			2.35	.423	1 : 5.6	.448			1.902								.036
227	227	do	do	.9975	9.25	7.35			1.93	.199	1 : 9.7	.631			1.299								.080
394	1253	Zinfandel, 1890	do	*.9954	11.64	9.26			2.99	.309	1 : 8.6	.448			2.203			.219					.198
10	12634	Zinfandel		.9945	13.15	10.33	0.596	5.8 : 100	2.89	.255	1 : 11.3	.671			2.219		−0.6	.070	0.0089	0.0740		0.268	.231
27	12651	do		.9935	13.14	10.43	.528	5.1 : 100	2.71	.233	1 : 11.5	.631			2.050		−0.5	.129	.0090	.1015		.254	.265
36	12660	do		.9935	11.91	9.46	.507	5.4 : 100	2.50	.272	1 : 9.2	.631			1.869		−1.3	.070	.0087	.0826		.229	.206
46	12671	do		.9959	12.39	9.84	.558	5.7 : 100	3.06	.234	1 : 12.1	.719			2.222		−0.5	.219	.0079	.0658		.249	.153
66	12694	Zinfandel, 1889	4 years	.9938	12.53	9.96	.460	4.6 : 100	2.63	.266	1 : 9.9	.658			1.972		−0.1	.099	.0063	.0548		.180	.170
78	12706	Zinfandel, 1891	2 years	.9968	12.57	9.97	.531	5.3 : 100	3.36	.303	1 : 10.6	.761			2.460		−0.8	.239	.0201	.0766		.305	.159
85	12713	Zinfandel		.9957	11.93	9.47	.631	6.7 : 100	3.22	.453	1 : 7.0	.699			2.372		−1.5	.149	.0070	.2392		.442	.147
100	12728	do		.9932	12.75	10.12	.562	5.6 : 100	2.63	.266	1 : 9.9	.704			1.917		−1.2	.109	.0194			.329	.133
119	12747	Zinfandel, 1888	5 years	.9966	11.49	9.12	.500	5.5 : 100	3.11	.300	1 : 10.4	.848			2.262		−1.5	.030	.0167	.1400		.492	.147

158	12789	.....do	.....do	.9946	13.14	10.43	.543	5.2 : 100	3.05	.285	1 : 10.4	.698			2.273		−0.8	179		.1035		.310	.181
163	12794	Zinfandel		.9948	12.16	9.70	.508	6.0 : 100	2.86	.262	1 : 10.9	.820			2.040		−1.7	.030	.0089	.0640		.522	.138
164	12795	.....do		.9919	12.72	10.10	.442	4.4 : 100	2.26	.271	1 : 8.3	.730			1.511		−0.8	.119	.0066	.0565		.174	.239
175	12806	.....do		.9973	13.17	10.45	.566	5.4 : 100	3.35	.290	1 : 11.3	.869			2.411		−1.2	.170	.0085	.0840		.399	.192
191	12823	.....do		.9960	11.49	9.12	.510	5.6 : 100	2.74	.270	1 : 9.2	.692			1.799		−1.5	.349	.0123	.0725		.305	.177
706	1508	.....do[2]		.9953	13.51	10.72	.776	7.2 : 100	3.16	.210	1 : 15.5	.702	0.164	0.497	2.458	1 : 4.3						.346	.440
700	1420	.....do		.9954	12.45	9.89			2.98	.296	1 : 10.0	.642			2.338					.043			.378
708	3042	Zinfandel, 1893	2 years	.9953	13.29	10.56			3.24	.191	1 : 17.0	.702	.077	.606	2.538	1 : 9.1							
713	3050	Zinfandel, 1896	2 months	.9983	10.84	8.59			3.28	.271	1 : 12.1	.666	.095	.547	2.614	1 : 7.0							
714	3074	Zinfandel, 1893	3½ months	.9942	12.30	9.76			2.61	.222	1 : 11.8	.574	.090	.461	2.036	1 : 6.4					.0015		

RED WINES—MISCELLANEOUS.

[3]707	3041	Red wine, 1892	2 years	0.9973	10.29	8.17	0.825	10.1 : 100	2.69	0.321	1 : 8.4	0.613	0.086	0.506	2.077	1 : 7.1						0.258	0.190
[4]711	3045	Red wine, 1895	8 months	.9958	13.09	10.39	1.083	10.4 : 100	3.39	.216	1 : 15.7	.612	.096	.492	3.294	1 : 6.4				0.025			.332

WHITE WINES—RHINE-WINE TYPE.

5	12629	Riesling, 1887	6 years	0.9911	12.08	9.59	0.608	6.3 : 100	1.90	0.217	1 : 8.8	0.574			1.326		−0.7	0.089	0.0070	0.1015		0.2354	
15	12639	Riesling		.9942	12.99	10.33	.534	5.2 : 100	2.27	.216	1 : 8.1	.515			1.229		−3.5	.626	.0227	.1150		.1802	
19	12643	Johannisberger Riesling.		.9897	14.54	11.55	.529	4.6 : 100	1.95	.224	1 : 8.6	.490			1.431			.129	.0049	.1210		.3526	
22	12646	Riesling		.9927	12.39	9.10	.632	6.9 : 100	2.10	.193	1 : 10.4	.631			1.370		−0.1	.199	.0033	.1048		.1241	
51	12676	.....do		.9927	11.74	9.32	.558	6.0 : 100	2.07	.203	1 : 10.2	.509			1.561		−0.9	.089	.0056	.1229		.2358	
69	12697	Riesling, 1889	4 years	.9900	12.43	9.87	.496	5.0 : 100	1.64	.179	1 : 9.2	.518			1.122		−0.3	.069	.0045	.0785		.1361	
80	12708	Riesling, 1887	6 years	.9954	11.35	9.00	.554	6.2 : 100	2.60	.245	1 : 10.0	.537			1.914		−0.7	.249	.0111	.1218		.5164	
81	12709	Riesling, 1890	3 years	.9942	12.45	9.88	.568	5.8 : 100	2.11	.252	1 : 8.2	.637			1.424		−0.6	.149	.0071			.3728	
88	12716	Riesling		.9911	12.22	9.59	.505	5.3 : 100	1.85	.175	1 : 10.6	.635			1.215		−0.3	.059	.0035	.0633		.2042	
92	12720	Gray Riesling, 1887	6 years	.9918	13.32	10.57	.924	8.7 : 100	2.33	.184	1 : 12.7	.725			1.605		−0.5	.089	.0029	.0965		.2542	
93	12721	Gray Riesling, 1888	5 years	.9914	11.34	9.00	.687	7.6 : 100	2.37	.186	1 : 12.7	.652			1.718		−1.0	.050	.0105	.0693		.2231	
97	12725	Riesling		.9931	10.91	8.66	.518	6.0 : 100	2.08	.198	1 : 10.5	.575			1.496		−0.4	.109	.0091	.1225		.3414	
102	12730	.....do		.9922	12.60	9.57	.506	5.3 : 100	1.86	.176	1 : 10.5	.636			1.224		−0.7	.060	.0246	.0763		.2047	
109	12737	.....do		.9913	13.30	10.56	.511	4.8 : 100	2.27	.263	1 : 8.6	.569			1.701		−0.4		.0048	.0848		.1735	
142	12772	Franken Riesling, 1890	3 years	.9893	14.22	11.29	.744	6.6 : 100	1.83	.140	1 : 13.1	.591			1.239		−0.2	.089				.0989	
156	12787	Riesling		.9897	14.54	11.54	.843	7.3 : 100	2.27	.220	1 : 10.1	.501			1.730		−1.2	.139				.3774	
166	12797	....do		.9902	12.96	10.29	.529	5.1 : 100	1.85	.223	1 : 8.3	.579			1.281		−0.5	.059	.0059	.1045		.2104	
176	12807	.....do		.9912	10.49	8.38	.606	7.2 : 100	1.66	.146	1 : 11.4	.548			1.112		−1.0	.079				.2230	
194	12826	.....do		.9912	12.54	9.95	.582	5.8 : 100	1.81	.172	1 : 10.3	.474			1.307		−0.2	.129	.0055	.1120		.1673	
196	12828	Johannisberger Riesling.		.9913	12.24	9.71	.679	7.0 : 100	1.98	.158	1 : 12.0	.563			1.239		−0.5	.178	.0049	.0877		.1549	
279	487	Johannisberg Riesling, 1886.	6 to 8 months.	.9930	9.73	7.72			1.79			.596			1.194								
292	538	.....do	.....do	.9930	8.85	7.02			1.79			.546			1.244								

* Specific gravity calculated from alcohol and extract.

[1] Fortified.

[2] Undetermined extract, 1.677 grams per 100 cc.

[3] Undetermined extract, 1.038 grams per 100 cc.

[4] Undetermined extract, 1.699 grams per 100 cc.

Analyses of samples of American wine—Continued.

CALIFORNIA WINES—Continued.

WHITE WINES—RHINE-WINE TYPE—Continued.

No.	Laboratory No.	Variety.	Age of wine.	Specific gravity.	Per cent alcohol by volume.	Grams per 100 cc.		Glycerol-alcohol ratio.	Grams per 100 cc.		Ash-extract ratio.	Grams per 100 cc.				Volatile-acid-total-acid ratio.	Polarization.	Grams per 100 cc.					
						Alcohol.	Glycerol.		Extract.	Ash.		Total acids.	Volatile acids.	Fixed acids.	Extract, rest.			Reducing sugar.	Sodium chloride.	Potassium sulphate.	Sulphurous acid.	Proteids.	Tannin and coloring matter.
310	742	Johannisberg Riesling, 1887.	6 to 8 months.	0.9900	11.00	8.73	.....	.....	2.28	.....	.....	0.535	0.089	0.424	1.745	1 : 6.0	.....	.....	.....	.....	.....	.....	.....
335	874	Johannisberg Riesling, 1888.	.....do.....	.9930	11.18	8.88	.....	.....	2.09	.....	.....	.467	.....	.....	1.623	.....	.....	.....	.....	.....	.....	.....	.....
346	1068	Johannisberg Riesling, 1889.	.....do.....	.9933	10.58	8.39	.....	.....	2.06	.....	.....	.546	.....	.....	1.514	.....	.....	.....	.....	.....	.....	.....	.....
364	1139	.....do.....	.....do.....	.9905	11.91	9.45	.....	.....	1.56	.....	.....	.515	.....	.....	1.045	.....	.....	.....	.....	.....	.....	.....	.....
399	1264	Johannisberg Riesling, 1890.	.....do.....	.9900	12.18	9.66	.....	.....	2.38	.....	.....	.416	.....	.....	1.964	.....	.....	.....	.....	.....	.....	.....	.....
209	94	Franken Riesling, 1883	.....do.....	.9905	11.22	8.90	.....	.....	1.56	0.289	1 : 5.4	.371	.....	.....	1.189	.....	.....	.....	.....	.....	.....	.....	.....
260	342	Franken Riesling, 1885	.....do.....	1.0020	10.58	8.39	.....	.....	4.38	.170	1 : 22.8	.601	.371	.137	3.208	1 : 1.6	.....	0.651	.....	.....	.....	.....	.....
272	365	.....do.....	.....do.....	.9900	11.27	8.95	.....	.....	1.78	.158	1 : 11.3	.346	.....	.....	1.434	.....	.....	.....	.....	.....	.....	.....	.....
283	491	Franken Riesling, 1886	.....do.....	.9900	8.85	7.02	.....	.....	1.78	.....	.....	.554	.....	.....	1.226	.....	.....	.....	.....	.....	.....	.....	.....
303	699	Franken Riesling, 1887	.....do.....	.9905	12.73	10.11	.....	.....	2.28	.....	.....	.594	.089	.483	1.686	1 : 6.7	.....	.....	.....	.....	.....	.....	.....
337	885	Franken Riesling, 1888	.....do.....	.9930	9.54	7.57	.....	.....	1.79	.....	.....	.596	.....	.....	1.194	.....	.....	.....	.....	.....	.....	.....	.....
342	929	.....do.....	.....do.....	.9920	10.25	8.13	.....	.....	2.68	.....	.....	.675	.....	.....	2.005	.....	.....	.....	.....	.....	.....	.....	.....
360	1129	Franken Riesling, 1889	.....do.....	.9916	12.73	10.11	.....	.....	2.03	.....	.....	.327	.....	.....	1.703	.....	.....	.....	.....	.....	.....	.....	.....
401	1273	Franken Riesling, 1890	.....do.....	*.9923	11.09	8.71	.....	.....	1.79	.....	.....	.327	.....	.....	1.463	.....	.....	.....	.....	.....	.....	.....	.....
486	1501	Franken Riesling, 1891	.....do.....	.9900	12.36	9.82	.....	.....	2.03	.....	.....	.376	.....	.....	1.654	.....	.....	.....	.....	.....	.....	.....	.....
610	1883	Franken Riesling, 1893	.....do.....	.9960	8.85	7.02	.....	.....	1.79	.....	.....	.498	.....	.....	1.292	.....	.....	.....	.....	.....	.....	.....	.....
14	12638	Hock.....	.....	.9898	13.59	10.79	0.723	6.7 : 100	2.03	.208	1 : 9.6	.518	.....	.....	1.483	.....	—0.8	.129	0.0188	0.0635	.....	0.1113	.....
42	12666	.....do.....	.....	.9912	12.53	9.95	.555	5.6 : 100	2.06	.203	1 : 10.1	.586	.....	.....	1.474	.....	—0.2	.089	.0053	.0725	.....	.1921	.....
68	12696	Old Hock, 1889.....	4 years.....	.9911	11.93	9.48	.971	10.2 : 100	1.79	.168	1 : 10.7	.603	.....	.....	1.187	.....	—0.3	.099	.0030	.0720	.....	.1425	.....
101	12729	Hock.....	.....	.9933	9.57	7.60	.558	7.3 : 100	1.88	.215	1 : 8.7	.637	.....	.....	1.243	.....	—0.3	.089	.0089	.1165	.....	.2483	.....
108	12736	.....do.....	.....	.9905	12.18	9.67	.481	5.0 : 100	1.71	.213	1 : 8.0	.535	.....	.....	1.175	.....	—0.3	.079	.0043	.0658	.....	.1362	.....
155	12786	.....do.....	.....	.9896	14.57	11.57	.756	6.5 : 100	2.40	.228	1 : 10.5	.501	.....	.....	1.899	.....	—1.3	.....	.....	.....	.....	.3711	.....
280	488	Kleinberger, 1886.....	6 to 8 months.	.9930	8.46	6.71	.....	.....	1.79	.....	.....	.467	.....	.....	1.323	.....	.....	.....	.....	.....	.....	.....	.....
306	715	Kleinberger, 1887.....	.....do.....	.9900	12.09	9.60	.....	.....	2.57	.....	.....	.386	.....	.....	2.184	.....	.....	.....	.....	.....	.....	.....	.....
332	865	Kleinberger, 1888.....	.....do.....	.9940	10.83	8.60	.....	.....	2.58	.....	.....	.457	.....	.....	2.123	.....	.....	.....	.....	.....	.....	.....	.....
333	866	.....do.....	.....do.....	.9933	10.42	8.27	.....	.....	2.04	.....	.....	.517	.....	.....	1.523	.....	.....	.....	.....	.....	.....	.....	.....

350	1088	Kleinberger, 1889	do	.9938	12.00	9.53			2.83			.527			2.303									
355	1106	do	do	.9917	12.36	9.82			2.48			.526			1.954									
407	1282	Kleinberger, 1890	do	*.9944	11.00	8.73			2.31			.398			1.912									
517	1578	Kleinberger, 1891	do	.9925	12.82	10.18			2.53			.486			2.044									
569	1712	Kleinberger, 1892	do	.9945	10.83	8.60			2.83			.786			2.044									
607	1880	do	do	.9955	9.00	7.14			2.09			.597			1.493									
649	1981	do	do	.9945	11.45	9.10			3.08			.567			2.513									
658	1990	do	do	.9935	11.27	8.95			2.19			.616			1.574									
347	1075	Red Traminer, 1889	do	.9928	13.91	11.04			2.63			.496			2.134									
417	1304	Red Traminer, 1890	do	.9900	12.82	10.18			2.13			.416			1.714									
667	2017	Red Traminer, 1893	do	.9930	13.73	10.90			3.08			.377			2.703									
168	12799	Traminer, 1890	3 years	.9883	13.72	10.89	.741	6.8 : 100	1.87	.154	1 : 12.1	.545			1.325		−0.7					.1235	.057	
[1]702	1504	do	do	.9917	14.15	11.23	.954	8.5 : 100	2.47	.206	1 : 12.0	.595	.089	.484	1.875	1 : 6.7						.3724	.064	
402	1274	Rulander, 1890	6 to 8 months.	*.9926	12.64	10.02			2.26			.357			1.903									
423	1315	do	do	.9905	15.00	11.91			2.42			.357			2.063									
20	12644	do	do	.9909	13.60	10.80	.633	5.9 : 100	2.20	.198	1 : 10.4	.474			1.586		−0.5	.240	.0040	.0895		.2292		
52	12677	Cabernet Traminer		.9917	12.10	9.85	.595	6.0 : 100	1.99	.228	1 : 8.7	.669			1.321		−0.3	.069	.0047	.1771		.1983		
171	12802	Rhine wine type, 1891	2 years	.9913	11.63	9.24	.474	5.1 : 100	1.68	.217	1 : 7.3	.446			1.146		−0.8	.188	.0033	.0773		.1859		
247	261	Burger, 1884	6 to 8 months.	.9925	10.63	8.44			1.64	0.179	1 : 9.2	0.526			1.114									
246	260	do	do	.9955	10.50	8.33			2.04	.259	1 : 7.9	.597			1.443									
263	348	Burger, 1885	do	.9940	12.00	9.51			2.67	.447	1 : 6.0	.676			1.994									
264	349	do	do	.9938	10.16	8.06			1.92	.189	1 : 10.2	.646			1.274									
271	362	do	do	.9920	11.00	8.73			1.67	.179	1 : 9.3	.536			1.134									
273	366	do	do	.9950	6.00	4.76			1.51	.229	1 : 6.6	.478			1.032									
276	471	Burger, 1886	do	.9925	10.25	8.13			1.79			.744			1.046									
285	501	do	do	.9980	5.00	3.98			1.30			.788			0.512									
287	508	do	do	.9930	9.90	7.86			2.04			.397			1.643									
313	748	Burger, 1887	do	.9928	9.90	7.86			2.09			.536	0.070	0.449	1.554	1: 7.9								
317	754	do	do	.9925	11.45	9.10			2.30			.655	.030	.618	1.645	1:21.7								
295	681	do	do	.9930	12.36	9.82			2.58			.496	.109	.360	2.084	1: 4.5								
328	830	Burger, 1888	do	.9963	11.55	9.18			2.09			.578			1.512									
369	1173	Burger, 1889	do	.9950	10.42	8.27			2.34			.428			1.912									
446	1383	Burger, 1890	do	.9925	11.45	9.10			2.42			.496			1.924									
506	1565	Burger, 1891	do	.9930	10.91	8.66			2.28			.616			1.664									
550	1667	Burger, 1892	do	.9948	9.73	7.72			2.34			.507			1.833									
581	1773	do	do	.9935	11.00	8.73			2.19			.546			1.644									
26	12650	Burger		.9920	11.35	9.01	0.535	5.9 : 100	1.87	.180	1 : 9.7	.497			1.255		−0.5	0.218	0.0061	0.0808		0.1302		
705	1507	do	1 year	.9942	9.93	7.89	.727	9.2 : 100	1.93	.168	1 : 11.5	.574	.186	.233	1.356							.188		

[1] Undetermined extract, 0.826 gram per 100 cc.

[2] Undetermined extract, 0.802 gram per 100 cc.

*Specific gravity calculated from alcohol and extract.

Analyses of samples of American wine—Continued.

CALIFORNIA WINES—Continued.

WHITE WINES—BURGUNDY TYPE.

No.	Laboratory No.	Variety.	Age of wine.	Specific gravity.	Per cent alcohol by volume.	Grams per 100 cc.		Glycerol-alcohol ratio.	Grams per 100 cc.		Ash-extract ratio.	Grams per 100 cc.				Volatile-acid-total-acid ratio.	Polarization.	Grams per 100 cc.					
						Alcohol.	Glycerol.		Extract.	Ash.		Total acids.	Volatile acids.	Fixed acids.	Extract, rest.			Reducing sugar.	Sodium chloride.	Potassium sulphate.	Sulphurous acid.	Proteids.	Tannin and coloring matter.
329	845	Pinot Blanc, 1888	6 to 8 months.	0.9950	12.09	9.60	.....	.....	2.59	.....	.....	0.507	.....	.....	2.083	.....	.....	.....	.....	.....	.....	.....	.....
496	1517	.....do	.....do	.9905	13.27	10.54	.....	.....	2.08	.....	.....	.565	.....	.....	1.515	.....	.....	.....	.....	.....	.....	.....	.....
524	1593	.....do	.....do	.9900	14.90	11.83	.....	.....	2.18	.....	.....	.346	.....	.....	1.834	.....	.....	.....	.....	.....	.....	.....	.....
186	12817	Pinot Blanc	.....	.9918	12.73	10.11	0.646	6.4 : 100	2.05	0.185	1 : 11.1	.708	.....	.....	1.342	.....	—0.1	.....	.....	.....	.....	0.1178	0.031
323	776	Chardonay, 1887	6 to 8 months.	.9940	12.09	9.60	.....	.....	2.58	.....	.....	.567	0.050	0.505	2.013	1 : 11.3	.....	.....	.....	.....	.....	.....	.....
330	849	Chardonay, 1888	.....do	.9940	10.42	8.27	.....	.....	2.44	.....	.....	.378	.....	.....	2.062	.....	.....	.....	.....	.....	.....	.....	.....
331	858	.....do	.....do	.9920	12.36	9.82	.....	.....	2.78	.....	.....	.605	.....	.....	2.175	.....	.....	.....	.....	.....	.....	.....	.....
357	1110	Chardonay, 1889	.....do	.9910	12.00	9.53	.....	.....	2.08	.....	.....	.525	.....	.....	1.555	.....	.....	.....	.....	.....	.....	.....	.....
359	1121	.....do	.....do	.9915	12.64	10.03	.....	.....	2.53	.....	.....	.446	.....	.....	2.084	.....	.....	.....	.....	.....	.....	.....	.....
39	12663	Chablis	.....	.9909	12.47	9.90	.573	5.8 : 100	1.97	.182	1 : 10.8	.542	.....	.....	1.428	.....	—1.5	0.100	0.0059	0.0868	.....	.3283	.035
50	12675	.....do	.....	.9918	12.48	9.91	.545	5.5 : 100	2.19	.248	1 : 8.4	.562	.....	.....	1.518	.....	—1.0	.210	.0067	.1133	.....	.2355	.038
98	12726	.....do	.....	.9919	12.76	10.13	.598	5.9 : 100	2.13	.242	1 : 8.8	.519	.....	.....	1.611	.....	—1.0	.....	.....	.....	.....	.2077	.053
110	12738	.....do	.....	.9921	11.45	8.99	.653	7.3 : 100	1.84	.185	1 : 9.8	.485	.....	.....	1.325	.....	—0.4	.130	.....	.0724	.....	.1860	.048
129	12759	White Burgundy	2 years	.9913	12.22	11.17	.552	4.9 : 100	2.22	.178	1 : 12.5	.502	.....	.....	1.368	.....	—2.4	.450	.0035	.0550	.....	.2105	.029

WHITE WINES—SAUTERNE TYPE.

241	252	Semillon, 1884	6 to 8 months.	0.9912	12.36	9.82	.....	.....	1.91	0.178	1 : 10.7	0.377	.....	.....	1.533	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	Semillon, 1886	.....do	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
311	745	Semillon, 1887	.....do	.9925	12.54	9.96	.....	.....	2.78	.139	1 : 20.0	.517	.....	.....	2.263	.....	.....	.....	.....	.....	.....	.....	.....
315	750	.....do	.....do	.9940	11.36	9.02	.....	.....	2.58	.050	1 : 51.6	.467	.....	.....	2.113	.....	.....	.....	.....	.....	.....	.....	.....
316	753	.....do	.....do	.9910	12.82	10.18	.....	.....	2.08	.059	1 : 35.3	.654	.....	.....	1.426	.....	.....	.....	.....	.....	.....	.....	.....
338	899	Semillon, 1888	.....do	.9925	11.45	9.10	.....	.....	2.58	.....	.....	.536	.....	.....	2.044	.....	.....	.....	.....	.....	.....	.....	.....
339	900	.....do	.....do	.9920	11.27	8.94	.....	.....	2.33	.....	.....	.436	.....	.....	1.894	.....	.....	.....	.....	.....	.....	.....	.....
362	1131	Semillon, 1889	.....do	.9915	12.91	10.25	.....	.....	2.28	.....	.....	.436	.....	.....	1.844	.....	.....	.....	.....	.....	.....	.....	.....
551	1668	Semillon, 1892	.....do	.9950	12.54	9.96	.....	.....	3.28	.....	.....	.587	.....	.....	2.693	.....	.....	.....	.....	.....	.....	.....	.....
136	12766	White Semillon, 1890	3 years	.9908	11.28	8.96	0.595	6.6 : 100	1.70	.160	1 : 10.6	.535	.....	.....	1.165	.....	±0	.....	.....	.....	.....	0.0867	0.022

137	12767	White Semillon, 1891	2 years	.9905	12.59	10.00	.654	6.5 : 100	1.87	.162	1 : 11.5	.585			1.285		+0.6					.1238	.015
138	12768	Semillon, 1890	3 years	.9981	14.62	11.73	.904	7.7 : 100	1.93	.169	1 : 11.4	.533			1.397		±0					.1186	.036
712	3747	Semillon, 1896	1 year	*.9933	10.51				1.77	.161	1 : 11.0	.551	0.073	0.460	1.219	1 : 7.6				0.044	0.003		
58	12686	Semillon	1 year	.9904	13.60	10.80	.686	6.4 : 100	2.03	.239	1 : 8.4	.528			1.483		1.0	0.119	0.0041	.1648		.1920	.023
242	254	Sauvignon Blanc, 1884	6 to 8 months.	.9918	12.36	9.82			2.08	.156	1 : 13.3	.449			1.631								
243	255	.....do	.....do	*.9919	12.75	10.11			2.16	.190	1 : 11.4	.548			1.612								
424	1317	Sauvignon Blanc, 1890	.....do	.9900	15.20	12.07			2.10			.475			1.625								
470	1464	Sauvignon Blanc, 1891	.....do	.9960	11.00	8.73			2.73			.528			2.202								
282	490	Sauvignon Vert, 1886	.....do	.9930	8.85	7.02			1.74			.526			1.214								
301	697	Sauvignon Vert, 1887	.....do	.9900	12.00	9.53			2.18			.742	.119	.593	1.438	1 : 6.2							
305	708	.....do	.....do	.9920	13.45	10.67			2.58			.436			2.144								
307	724	.....do	.....do	.9940	11.82	9.38			2.58			.467	.089	.356	2.113	1 : 5.2							
336	880	Sauvignon Vert, 1888	.....do	.9935	9.90	7.86			2.31			.447			1.863								
351	1095	Sauvignon Vert, 1889	.....do	.9960	11.00	8.73			2.69			.468			2.222								
361	1130	.....do	.....do	*.9920	11.91	9.46			2.38			.397			1.983								
405	1275	Sauvignon Vert, 1890	.....do	.9948	10.25	8.93			2.19			.418			1.772								
464	1455	Sauvignon Vert, 1891	.....do	.9940	11.09	8.80			2.58			.487			2.093								
492	1513	.....do	.....do	.9903	13.09	10.39			2.18			.525			1.655								
493	1514	.....do	.....do	.9940	11.45	9.10			2.53			.527			2.003								
499	1847	Sauvignon Vert, 1893	.....do	.9950	11.45	9.0			2.59			.438			2.152								
692	2287	Sauvignon Vert, 1894	.....do	.9910	12.82	10.18			2.28			.406			1.874								
107	12735	Sauvignon Vert		.9909	12.36	9.81	.512	5.2 : 100	1.80	.213	1 : 8.4	.546			1.246		0.4	.108	.0041	.0655		.1425	.036
141	12771	Sauvignon Vert, 1890	3 years	.9892	13.73	10.90	.724	6.6 : 100	1.80	.144	1 : 12.5	.512			1.288		±0	.069		.0453		.1051	.029
318	762	Folle Blanche, 1887	6 to 8 months.	.9930	11.09	8.81			2.18			.606	.099	.482	1.574	1 : 6.1							
319	763	.....do	.....do	.9915	13.00	10.32			2.58			.496			2.084								
.....	.....	Folle Blanche, 1888	.....do																				
.....	.....	.....do	.....do																				
367	1167	Folle Blanche, 1889	.....do	.9918	11.09	8.81			1.93			.436			1.494								
400	1272	Folle Blanche, 1880	.....do	*.9974	8.85	7.02			2.43			.529			1.901								
480	1482	Folle Blanche, 1891	.....do	.9930	10.58	8.41			2.32			.377			1.943								
553	1672	Folle Blanche, 1892	.....do	.9950	11.45	9.10			2.69			.438			2.252								
624	1909	Folle Blanche, 1893	.....do	.9970	10.17	8.07			2.09			.588			1.502								
668	2020	.....do	.....do	.9940	10.36	8.22			2.19			.766			1.424								
.....	.....	Folle Blanche	.....do																				
244	258	Folle Blanche, 1884	.....do	.9910	12.36	9.32			1.65	.208	1 : 7.9	.585			1.065								
245	259	.....do	.....do	.9939	8.75	6.95			1.79	.239	1 : 7.5	.567			1.223								
290	515	Folle Blanche, 1886	.....do	.9955	8.23	6.53			1.79			.687			1.103								
29	12653	Château Yquem		1.0137	12.68	10.07	.438	4.4 : 100	6.78	.368	1 : 9.0	.604			2.707		—18.6	3.569				.3548	.039
145	12775	Château Yquem Souvenir.		1.0157	12.82	10.18	.463	4.5 : 100	5.57	.254	1 : 21.8	.560			5.010		— 6.6					.3809	.087
185	12816	Sauvignon		0.9909	12.59	10.00	.567	5.7 : 100	1.89	.191	1 : 9.9	.440			1.450		— 1.0					.1425	.034
6	12630	Sauterne		.9974	12.74	10.11	.178	1.8 : 100	3.45	.215	1 : 9.1	.550			1.410		— 5.4	1.590	.0079	.1448		.2307	.043
7	12631	.....do		.9953	14.14	10.20	.502	4.9 : 100	3.44	.147	1 : 12.7	.510			1.460		— 5.8	1.570	.0068	.0755		.3170	.040
12	12636	.....do		.9914	12.70	10.07	.642	6.4 : 100	2.02	.226	1 : 8.1	.535			1.290		— 0.7	0.290		.0653		.1288	.042
30	12654	Haut Sauterne		.9989	14.05	11.16	.502	4.9 : 100	4.02	.297	1 : 8.0	.629			1.741		— 8.0	1.750	.0030	.1115		.2997	.035
31	12655	Sauterne		.9903	15.19	12.06	.600	5.0 : 100	2.39	.297	1 : 7.5	.490			1.730		— 1.2	0.270	.0027	.1120		.2847	.041
41	12665	Haut Sauterne, 1888	5 years	.9973	13.44	10.67	.557	5.2 : 100	3.53	.236	1 : 9.1	.605			1.544		— 3.5	1.480	.0017	.1663		.2431	.062
44	12668	Sauterne		.9913	13.76	10.92	.409	3.7 : 100	1.72	.269	1 : 6.4	.597			1.123		— 0.5	0.050	.0060	.0815		.2354	.044
57	12685	.....do		.9918	14.33	11.38	.472	4.1 : 100	2.27	.230	1 : 9.2	.543			1.577		— 0.5	0.250	.0067	.1129		.2727	.041
64	12692	Sauterne, 1889	4 years	.9934	10.55	8.37	.551	6.6 : 100	1.69	.167	1 : 9.4	.481			1.089		— 0.8	0.220		.0720		.0869	.036

*Specific gravity calculated from alcohol and extract.

Analyses of samples of American wine—Continued.

CALIFORNIA WINES—Continued.

WHITE WINES—BURGUNDY TYPE—Continued.

No.	Laboratory No.	Variety.	Age of wine.	Specific gravity.	Per cent alcohol by volume.	Grams per 100 cc.		Glycerol-alcohol ratio.	Grams per 100 cc.		Ash-extract ratio.	Grams per 100 cc.				Volatile-acid-total-acid ratio.	Polarization.	Grams per 100 cc.						
						Alcohol.	Glycerol.		Extract.	Ash.		Total acids.	Volatile acids.	Fixed acids.	Extract, rest.			Reducing sugar.	Sodium chloride.	Potassium sulphate.	Sulphurous acid.	Proteids.	Tannin and coloring matter.
70	12698	Sauterne, 1888	5 years	0.9954	12.22	9.73	0.577	5.9 : 100	2.56	0.225	1 : 10.7	0.582	.....	.....	1.828	.....	— 0.7	0.250	.....	.....	.....	0.3796	0.062
71	12699	Haut Sauterne, 1887	6 years	.9997	11.78	9.47	.580	6.1 : 100	3.70	.251	1 : 8.7	.574	.....	.....	1.606	.....	— 2.7	1.620	.....	.....	.....	.4750	.057
72	12700	Haut Sauterne, 1888	5 years	.9943	11.58	9.69	.550	5.7 : 100	2.61	.259	1 : 9.5	.526	.....	.....	1.924	.....	— 0.8	0.260	.....	.....	.....	.4972	.067
73	12701	Haut Sauterne, 1890	3 years	.9932	12.51	9.94	.600	6.0 : 100	2.56	.258	1 : 9.7	.581	.....	.....	1.909	.....	— 1.5	0.170	0.0090	0.1440	.....	.4718	.045
74	12702	Haut Sauterne, 1891	2 years	.9935	12.21	9.70	.570	5.9 : 100	2.44	.260	1 : 9.0	.547	.....	.....	1.983	.....	— 1.0	0.210	.0105	.1248	.....	.4347	.050
87	12715	Sauterne	.....	.9898	13.74	10.92	.504	4.6 : 100	1.83	.168	1 : 10.9	.613	.....	.....	1.217	.....	— 0.2	0.080	.....	.....	.....	.2168	.039
96	12724	.....do	.....	.9970	13.16	10.45	.669	6.4 : 100	2.97	.209	1 : 7.9	.639	.....	.....	1.011	.....	— 5.0	1.420	.....	.....	.....	.2680	.051
99	12727	.....do	.....	.9917	13.43	10.64	.560	5.3 : 100	2.29	.230	1 : 10.0	.597	.....	.....	1.693	.....	— 1.2	.....	.....	.....	.....	.2727	.039
106	12734	.....do	.....	.9912	12.60	9.92	.515	5.2 : 100	1.80	.220	1 : 7.9	.508	.....	.....	1.228	.....	— 1.0	0.170	.0068	.....	.....	.1425	.034
120	12748	Sauterne, 1890	3 years	.9948	12.22	9.70	.507	5.2 : 100	2.78	.241	1 : 10.4	.638	.....	.....	1.872	.....	— 1.5	0.370	.....	.....	.....	.2363	.045
122	12750	Sauterne	.....	.9906	13.75	10.92	.589	5.4 : 100	2.07	.231	1 : 8.1	.552	.....	.....	1.308	.....	— 1.2	0.310	.....	.....	.....	.1920	.034
130	12760	Haut Sauterne, 1890	3 years	.9902	12.45	9.88	.523	5.3 : 100	1.90	.178	1 : 10.7	.518	.....	.....	1.382	.....	— 0.6	.....	.....	.....	.....	.2228	.026
131	12761	Haut Sauterne, 1891	2 years	.9890	12.67	10.22	.841	8.2 : 100	1.69	.156	1 : 10.8	.417	.....	.....	1.273	.....	— 0.4	.....	.....	.....	.....	.1144	.027
144	12774	Sauterne	.....	.9958	12.83	10.18	.599	5.9 : 100	3.07	.234	1 : 13.1	.555	.....	.....	2.515	.....	— 2.0	.....	.....	.....	.....	.3299	.064
153	12784	.....do	.....	.9918	13.52	10.73	.617	5.8 : 100	2.30	.267	1 : 8.6	.457	.....	.....	1.843	.....	— 1.5	.....	.....	.....	.....	.4154	.044
154	12785	Haut Sauterne	.....	.9924	14.70	11.67	.624	5.3 : 100	2.69	.285	1 : 8.8	.474	.....	.....	2.036	.....	— 0.7	0.280	.0045	.1372	.....	.5273	.039
160	12791	Sauterne, 1887	6 years	.9828	14.04	11.14	.572	5.1 : 100	2.71	.276	1 : 9.8	.553	.....	.....	2.157	.....	— 4.0	.....	.....	.....	.....	.2826	.039
173	12804	Sauterne, 1889	4 years	.9902	14.23	11.30	.626	5.5 : 100	2.05	.238	1 : 8.6	.573	.....	.....	1.477	.....	— 1.0	.....	.....	.....	.....	.2228	.055
187	12818	Sauterne	.....	.9909	12.38	9.83	.596	6.1 : 100	1.86	.191	1 : 9.7	.429	.....	.....	1.431	.....	— 1.6	.....	.....	.....	.....	.1301	.036
195	12827	.....do	.....	.9931	10.72	8.51	.538	6.3 : 100	2.24	.204	1 : 11.0	.503	.....	.....	1.737	.....	— 1.0	.....	.....	.....	.....	.2390	.045

WHITE WINES—SOUTHERN FRENCH TYPE.

249	264	Clairette Blanche, 1884	6 to 8 months.	0.9988	13.00	10.32	.....	.....	1.85	0.212	1 : 8.7	0.428	.....	.....	1.422	.....	.....	.....	.....	.....	.....	.....	.....
277	481	.....do	.....do	.9930	8.85	7.02	.....	.....	2.09	.....	.....	.546	.....	.....	1.544	.....	.....	.....	.....	.....	.....	.....	.....
289	513	Clairette Blanche, 1886	.....do	.9922	8.61	6.83	.....	.....	1.57	.....	.....	.466	.....	.....	1.104	.....	.....	.....	.....	.....	.....	.....	.....
291	535	.....do	.....do	.9920	10.00	.....	.....	.....	1.79	.....	.....	.506	.....	.....	1.284	.....	.....	.....	.....	.....	.....	.....	.....
321	771	Clairette Blanche, 1887	.....do	.9910	12.36	9.82	.....	.....	2.18	.....	.....	.604	0.139	0.430	1.576	1 : 4.3	.....	.....	.....	.....	.....	.....	.....

343	948	Clairette Blanche, 1888	do	.9905	11.27	8.95			1.78			.544			1.236																
368	1170	Clairette Blanche, 1889	do	.9920	11.55	9.16			2.53			.397			2.133																
374	1196	do	do	*.9933	8.70	6.90			1.34			.417			.923																
459	1420	Clairette Blanche, 1890	do	.9920	13.27	10.54			2.76			.417			2.343																
645	1969	Clairette Blanche, 1893	do	.9930	11.45	9.10			2.18			.526			1.654																
248	263	Marsanne, 1884	do	.9921	11.46	9.10			1.87	.175	1 : 10.7	.559			1.311																
453	1412	Marsanne, 1890	do	.9910	12.82	10.18			2.48			.496			1.984																
541	1619	Marsanne, 1892	do	.9900	22.18	17.60			4.56			.426			3.294			0.936													
659	2000	Marsanne, 1893	do	.9930	12.73	10.11			2.88			.427			2.453																
140	12770	Marsanne, 1890	3 years	.9882	13.73	10.90	0.826	7.6 : 100	1.85	.148	1 : 12.5	.595			1.355														0.1112	0.045
300	696	Chasselas Doré, 1887	6 to 8 months	.9905	11.64	9.24			1.85			.525			1.325																
341	917	Chasselas Doré, 1888	do	.9930	11.45	9.10			2.23			.377			1.853																
358	1112	Chasselas Doré, 1889	do	.9913	11.45	9.10			2.26			.277			1.983																
502	1561	Chasselas Doré, 1891	do	.9910	11.45	9.10			1.78			.386			1.394																
557	1677	Chasselas Doré, 1892	do	.9945	9.90	7.30			2.69			.398			2.292																
584	1776	do	do	.9920	11.00	8.74			2.08			.526			1.554																
111	12739	Chasselas		.9919	12.69	10.07	.704	6.6 : 100	2.02	.208	1 : 9.7	.591			1.428		—0.5												.1550	
161	12792	Golden Chasselas		.9904	11.89	9.44	.318	3.4 : 100	1.09	.189	1 : 5.8	.535			.555		—0.7												.2105	
17	12641	Gutedel		.9919	12.08	9.58	.480	5.0 : 100	1.82	.222	1 : 8.2	.536			1.284		—0.8	.069	.0076	.1060									.3162	.037
28	12652	do		.9902	13.24	10.53	.563	5.3 : 100	1.90	.220	1 : 8.2	.462			1.358		—0.1	.188	.0032	.0715									.2352	.039
58	12678	Cabernet Gutedel		.9904	13.76	10.91	.564	5.2 : 100	2.32	.266	1 : 8.0	.656			1.487		—0.6	.277	.0040	.2321									.2290	.043
139	12769	Gutedel, 1890	3 years	.9883	13.81	10.96	.830	7.6 : 100	1.65	.155	1 : 10.6	.540			1.110		—0.9												.0988	.034
167	12798	Cabernet Gutedel		.9880	12.63	11.03	.632	6.1 : 100	2.12	.224	1 : 9.5	.622			1.498		—3.4												.2378	.037
257	274	Ugni Blanc, 1884	6 to 8 months	.9942	11.10	8.81			1.99	.298	1 : 6.7	.507			1.483																
326	785	Ugni Blanc, 1887	do	.9950	9.63	7.63			2.59			.557	.149	.371	2.033	1 : 3.7															
345	954	Ugni Blanc, 1888	do	.9940	9.73	7.72			2.29			.447			1.843																
373	1195	Ugni Blanc, 1889	do	.9922	11.45	9.10			1.98			.387			1.593																
449	1405	Ugni Blanc, 1890	do	.9940	11.27	8.94			1.53			.735			1.795																
274	367	Verdal, 1885	do	.9950	8.07	6.40			1.79	.189	1 : 9.5	.517			1.273																
288	512	Verdal, 1886	do	.9932	10.36	8.22			1.79			.407			1.383																
294	585	do	do	.9955	8.46	6.71			1.54			.548			.992																
304	701	Verdal, 1887	do	.9940	10.75	8.53			2.58			.427	.080	.327	2.153	1 : 5.3															
438	1361	Verdal, 1890	do	.9902	9.73	7.72			1.78			.455			1.325																
462	1453	Verdal, 1891	do	.9955	8.07	6.40			2.59			.398			2.192																
563	1705	Verdal, 1892	do	.9950	11.00	8.73			2.29			.458			1.832																
626	1912	Verdal, 1893	do	.9950	9.27	7.37			2.59			.478			2.012																
650	1982	do	do	.9955	9.54	7.57			2.59			.448			2.142																
681	2082	do	do	.9940	10.12	8.03			2.24			.507			1.733																
[1]709	3043	do	do	.9974	8.29	6.57	.918	14.0 : 100	2.20	.290	1 : 7.6	.487	.080	.387	1.713	1 : 6.1															
207	92	Chauché Gris, 1883	2 years	.9905	12.54	9.94			1.41	.224	1 : 6.3	.678			.732																
208	93	do	6 to 8 months	.9925	11.54	9.17			1.52	.165	1 : 9.2	.591			.929																
211	117	Chauché Gris, 1884	do	.9935	11.45	9.10			2.04	.258	1 : 7.9	.656			1.384																
269	359	Chauché Gris, 1885	do	.9925	13.00	10.32			1.79	.248	1 : 7.2	.347			1.443																
281	489	Chauche Gris, 1886	do	.9930	10.17	8.07			1.79			.546			1.244																
293	540	do	do	.9915	10.91	8.66			1.88			.377			1.503																
296	682	Chauché Gris, 1887	do	.9930	13.27	10.54			2.78			.497	.079	.398	2.283	1 : 6.3															
298	694	do	do	.9910	13.36	10.61			2.48			.426			2.054																
348	1084	Chauché Gris, 1889	do	.9905	13.18	10.46			2.43			.366			2.067																
352	1096	do	do	.9900	16.20	12.85			3.32			.297			3.023																
381	1207	Chauché Gris, 1880	do	*.9935	11.18	8.88			2.14			.219			1.921																
485	1499	Chauché Gris, 1891	do	.9940	12.00	9.53			3.13			.437			2.693																

*Specific gravity calculated from alcohol and extract.

[1] Undetermined extract, 0.605 gram per 100 cc.

Analyses of samples of American wine—Continued.

CALIFORNIA WINES—Continued.

WHITE WINES—SOUTHERN FRENCH TYPE—Continued.

No.	Laboratory No.	Variety.	Age of wine.	Specific gravity.	Per cent alcohol by volume.	Grams per 100 cc.		Glycerol-alcohol ratio.	Grams per 100 cc.		Ash-extract ratio.	Grams per 100 cc.				Volatile-acid–total-acid ratio.	Polarization.	Grams per 100 cc.						
						Alcohol.	Glycerol.		Extract.	Ash.		Total acids.	Volatile acids.	Fixed acids.	Extract, rest.			Reducing sugar.	Sodium chloride.	Potassium sulphate.	Sulphurous acid.	Proteids.	Tannin and coloring matter.
490	1509	Chauché Gris, 1891	6 to 8 months.	0.9922	13.09	10.39	.....	.....	2.43	.....	.....	0.298	.....	.....	2.132	.....	.....	.....	.....	.....	.....	.....	.....
582	1774	Chauché Gris, 1892	.....do	.9915	11.91	9.45	.....	.....	2.48	.....	.....	.595	.....	.....	1.885	.....	.....	.....	.....	.....	.....	.....	.....
602	1864	Chauché Gris, 1893	.....do	.9935	11.27	8.95	.....	.....	2.29	.....	.....	.487	.....	.....	1.803	.....	.....	.....	.....	.....	.....	.....	.....
655	1987	.....do	.....do	.9910	14.00	11.11	.....	.....	2.58	.....	.....	.575	.....	.....	2.005	.....	.....	.....	.....	.....	.....	.....	.....
705	1507	Burger	.....	.9942	9.93	7.89	0.727	9.2 : 100	1.93	0.168	1 : 11.5	.574	0.186	0.233	1.356	.....	.....	.....	.....	.....	.....	0.188	.....
709	3043	Verdal, 1893	.....	.9974	8.29	6.57	.918	14.0 : 100	2.20	.290	1 : 7.6	.487	.080	.387	1.713	.....	.....	.....	.....	.....	.....	.....	.....

WHITE WINES—AUSTRIAN AND HUNGARIAN TYPE.

366	1158	Wälschriesling, 1889	6 to 8 months.	0.9905	13.27	10.54	.....	.....	1.83	.....	.....	0.357	.....	.....	1.473	.....	.....	.....	.....	.....	.....	.....	.....
383	1240	Wälschriesling, 1890	.....do	*.9906	13.64	10.82	.....	.....	2.06	.....	.....	.495	.....	.....	1.565	.....	.....	.....	.....	.....	.....	.....	.....
419	1309	.....do	.....do	.9903	11.09	8.81	.....	.....	1.88	.....	.....	.337	.....	.....	1.543	.....	.....	.....	.....	.....	.....	.....	.....
629	1915	Wälschriesling, 1893	.....do	.9920	13.27	10.54	.....	.....	2.28	.....	.....	.298	.....	.....	1.982	.....	.....	.....	.....	.....	.....	.....	.....
356	1108	Gruner Velteliner, 1889.	.....do	.9905	12.82	10.18	.....	.....	2.53	.....	.....	.475	.....	.....	2.055	.....	.....	.....	.....	.....	.....	.....	.....
382	1208	Gruner Velteliner, 1890.	.....do	*.9919	11.45	9.10	.....	.....	1.79	.....	.....	.317	.....	.....	1.473	.....	.....	.....	.....	.....	.....	.....	.....
436	1346	.....do	.....do	.9910	13.73	10.90	.....	.....	2.56	.....	.....	.466	.....	.....	2.094	.....	.....	.....	.....	.....	.....	.....	.....
463	1454	Gruner Velteliner, 1891.	.....do	.9920	12.82	10.18	.....	.....	2.93	.....	.....	.436	.....	.....	2.494	.....	.....	.....	.....	.....	.....	.....	.....
532	1605	.....do	.....do	.9920	12.00	9.52	.....	.....	2.13	.....	.....	.397	.....	.....	1.733	.....	.....	.....	.....	.....	.....	.....	.....
657	1989	Gruner Velteliner, 1893.	.....do	.9925	13.09	10.39	.....	.....	2.28	.....	.....	.566	.....	.....	1.714	.....	.....	.....	.....	.....	.....	.....	.....
354	1105	Rothgipfler, 1889	.....do	.9919	14.00	11.11	.....	.....	2.18	.....	.....	.387	.....	.....	1.793	.....	.....	.....	.....	.....	.....	.....	.....
371	1190	Peverella, 1889	.....do	.9933	9.73	7.72	.....	.....	1.54	.....	.....	.358	.....	.....	1.182	.....	.....	.....	.....	.....	.....	.....	.....
450	1406	Peverella, 1890	.....do	.9920	12.09	9.60	.....	.....	2.30	.....	.....	.565	.....	.....	1.735	.....	.....	.....	.....	.....	.....	.....	.....
469	1463	Peverella, 1891	.....do	.9915	11.73	9.30	.....	.....	2.23	.....	.....	.476	.....	.....	1.754	.....	.....	.....	.....	.....	.....	.....	.....
530	1602	.....do	.....do	.9930	10.83	8.58	.....	.....	2.04	.....	.....	.516	.....	.....	1.524	.....	.....	.....	.....	.....	.....	.....	.....

665	2015	Peverella, 1893	do	.9930	12.09	9.60			2.78			.665			2.115										
365	1148	Vernaccia Bianca, 1889.	do	.9903	12.09	9.60			2.43			.396			2.034										
585	1781	Vernaccia Bianca, 1892.	do	.9943	12.36	9.82			2.69			.727			1.963										
363	1133	Zierfahndler, 1889	do	*.9942	11.27	8.95			2.34			.437			1.903										
516	1577	Zierfahndler, 1891	do	*.9929	13.75	10.92			2.68			.318			2.362										
370	1174	Steinschiller, 1889	do	.9925	10.36	8.22			2.30			.566			1.734										
376	1201	do	do	.9928	9.82	7.79			1.65			.328			1.322										
455	1415	Steinschiller, 1890	do	.9910	11.09	8.81			2.12			.446			1.674										
586	1783	Steinschiller, 1892	do	.9930	8.46	6.71			2.09			.477			1.613										
666	2016	Steinschiller, 1893	do	.9935	11.18	8.88			2.58			.676			1.904										
671	2068	do	do	.9940	17.92	14.21			3.88			.408			3.472										
375	1197	Slankamenka, 1889	do	*.9952	8.07	6.40			1.62			.458			1.162										
656	1988	Slankamenka, 1893	do	.9920	12.64	10.02			2.58			.496			3.084										
679	2080	Bakator, 1893	do	.9910	12.54	9.94			2.08			.396			1.684										
143	12773	Green Hungarian	3 years	.9878	14.08	11.18	0.822	7.4 : 100	1.93	0.143	1 : 13.5	.578			1.352		— 0.9						0.1173		
55	12680	Tokay (Furmint)		1.0324	18.65	14.80	.940	6.4 : 100	14.74	.213	1 : 11.3	.286			2.124		—18.3	12.430	0.0032	0.0441		.0968	0.013		

WHITE WINES—PORT TYPE.

389	1247	Tinta de Madeira, 1890	6 to 8 months.	*0.9928	18.78	14.91			5.28			0.377						1.391						0.125	
415	1301	do	do	.9950	11.73	9.30			2.81			.378			2.432									.240	
440	1363	do	do	.9930	19.96	15.84			4.29			.526			2.911			.953						.163	
467	1459	Tinta de Madeira, 1891	do	.9895	18.78	14.91			3.22			.465			2.647			.228						.223	
508	1567	do	do	.9875	20.99	16.66			2.91			.425			2.485									.267	
546	1630	Tinta de Madeira, 1892	do	.9960	20.06	15.92			3.34			.438			1.259			1.743						.125	
580	1771	do	do	.9920	18.14	14.39			2.84			.496			1.115			1.329						.135	
600	1850	Tinta de Madeira, 1893	do	1.0000	17.26	13.70			3.00			.680						2.500						.096	
616	1896	do	do	.9920	21.19	16.82			3.19			.407			1.812			1.071							
431	1340	Tinta Amarella, 1890	do	.9940	11.45	9.10			2.56			.437			2.123									.106	
507	1566	Tinta Amarella, 1891	do	1.0030	19.08	15.15			3.29			.491						3.079						.207	
545	1629	Tinta Amarella, 1892	do	.9910	21.09	16.74			3.37			.525			1.365			1.685						.092	
554	1673	do	do	.9973	10.38	8.24			3.44			.439			3.001									.096	
579	1770	do	do	.9960	17.08	13.56			2.94			.608			.542			1.990						.169	
614	1891	Tinta Amarella, 1893	do	.9920	17.40	13.80			3.37									.496						.105	
617	1897	do	do	.9930	19.15	15.20			3.33			.526			1.663			1.241						.149	
675	2073	do	do	.9930	11.18	8.88			2.88			.566			2.314									.162	
443	1379	Tinta Cão, 1890	do	.9945	11.45	9.10			2.76			.418			2.342									.221	
473	1467	Tinta Cão, 1891	do	1.0045	16.98	13.48			6.48			.181			8.135			3.164						.095	
509	1568	do	do	.9900	16.24	12.89			2.67			.495			2.175									.208	
578	1769	Tinta Cão, 1892	do	*.9939	18.25	14.48			4.17			.596			3.574									.119	
633	1920	Tinta Cão, 1893	do	.9940	17.00	13.48			3.30			.686			1.739			.875						.099	
555	1674	Mourisco Preto, 1892	do	.9970	17.92	14.21			3.60									1.745						.083	
636	1923	Mourisco Preto, 1893	do	.9934	11.45	9.10			2.28			.407			1.873										
644	1968	do	do	.9915	18.30	14.51			3.23			.486			2.507			.337						1.066	
396	1256	Mission, 1890	do	*.9942	11.91	9.47			2.51			.378			2.132									.167	
570	1720	Mission, 1892	do	.9960	20.06	15.92			2.56									2.221							

*Specific gravity calculated from alcohol and extract.

Analyses of samples of American wine—Continued.

CALIFORNIA WINES—Continued.

WHITE WINES—PORT TYPE—Continued.

No.	Laboratory No.	Variety.	Age of wine.	Specific gravity.	Per cent alcohol by volume.	Grams per 100 cc.		Glycerol-alcohol ratio.	Grams per 100 cc.		Ash-extract ratio.	Grams per 100 cc.				Volatile-acid-total-acid ratio.	Polarization.	Grams per 100 cc.						
						Alcohol.	Glycerol.		Extract.	Ash.		Total acids.	Volatile acids.	Fixed acids.	Extract, rest.			Reducing sugar.	Sodium chloride.	Potassium sulphate.	Sulphurous acid.	Proteids.	Tannin and coloring matter.
647	1978	Mission, 1893	6 to 8 months.	0.9930	11.18	8.88	.....	.....	2.43	.....	.....	0.417	.....	.....	2.013	.....	.....	.....	.....	.....	.....	.....	.....
547	1631	Aleatico, 1892	.....do	1.0000	18.36	14.57	.....	.....	5.80	.....	.....	.520	.....	.....	2.980	.....	.....	2.400	.....	.....	.....	.....	.....
591	1796	Aleatico, 1893	.....do	1.0050	17.92	14.21	.....	.....	6.73	.....	.....	.....	.....	.....	.....	.....	.....	4.020	.....	.....	.....	.....	.....
601	1851	.....do	.....do	.9955	17.08	13.56	.....	.....	4.13	.....	.....	.617	.....	.....	2.209	.....	.....	1.404	.....	.....	.....	.....	0.124
420	1310	Moscatello Fino, 1890	.....do	.9955	17.37	13.77	.....	.....	3.52	.....	.....	.498	.....	.....	2.654	.....	.....	.468	.....	.....	.....	.....	.156
632	1919	Moscatello Fino, 1893	.....do	.9940	19.78	15.70	.....	.....	4.17	.....	.....	.427	.....	.....	2.481	.....	.....	1.362	.....	.....	.....	.....	.130
3	12627	Port	.....	1.0186	17.45	13.85	0.600	4.3 : 100	11.04	0.327	1 : 9.5	.530	.....	.....	2.594	.....	−15.1	8.016	0.0102	0.0815	.....	0.2738	.062
54	12679	Port wine	.....	1.0227	20.13	15.98	.647	4.0 : 100	12.24	.337	1 : 9.9	.497	.....	.....	2.943	.....	−18.4	9.000	.0083	.0755	.....	.2749	.061
82	12710	Port	.....	1.0157	15.32	12.16	.659	5.4 : 100	8.65	.327	1 : 9.9	.617	.....	.....	2.631	.....	−16.0	5.502	.0061	.1861	.....	.3619	.073
115	12743	.....do	.....	1.0098	17.25	13.69	.543	4.0 : 100	8.72	.234	1 : 11.6	.450	.....	.....	2.260	.....	−15.6	6.110	.0097	.0927	.....	.1893	.130
121	12749	Port, 1892	1 year	1.0148	20.26	16.08	.666	4.1 : 100	9.99	.238	1 : 14.7	.425	.....	.....	3.069	.....	−14.4	6.596	.0032	.0594	.....	.5518	.076
123	12751	Port	.....	1.0124	22.19	17.61	.555	3.2 : 100	10.19	.250	1 : 13.8	.458	.....	.....	2.988	.....	−17.4	6.854	.0082	.0867	.....	.3923	.080
147	12777	.....do	.....	1.0140	17.69	14.21	.163	1.1 : 100	8.67	.251	1 : 14.1	.548	.....	.....	2.991	.....	−14.7	5.231	.0070	.0912	.....	.9379	.122
170	12801	.....do	.....	1.0286	19.56	15.43	.419	2.7 : 100	13.43	.290	1 : 12.3	.459	.....	.....	3.125	.....	−19.0	9.946	.0075	.0814	.....	.3922	.080
180	12811	Port, 1882	11 years	1.0380	20.41	16.20	.590	3.6 : 100	16.66	.394	1 : 13.0	.700	.....	.....	4.424	.....	−27.1	11.636	.0087	.0957	.....	.2920	.100
181	12812	Port, 1885	8 years	1.0301	17.85	14.17	.538	3.8 : 100	14.08	.341	1 : 11.3	.571	.....	.....	3.298	.....	−21.0	10.311	.0060	.1076	.....	.4250	.076
182	12813	Port, 1886	7 years	1.0270	19.20	15.75	.707	4.5 : 100	13.16	.359	1 : 11.3	.645	.....	.....	3.413	.....	−21.7	9.202	.0117	.0904	.....	.2119	.085
183	12814	Port, 1888	5 years	1.0237	22.17	17.60	.634	3.6 : 100	12.62	.340	1 : 9.4	.422	.....	.....	2.778	.....	−17.1	9.520	.0079	.0676	.....	.3839	.073
34	12658	Port, 1884	9 years	1.0429	20.68	16.42	.436	2.7 : 100	17.22	.394	1 : 9.5	.486	.....	.....	3.275	.....	−19.2	13.559	.0076	.0751	.....	.7886	.059
694	1414	Port	.....	1.0288	17.07	13.55	.....	.....	12.94	.222	1 : 13.7	.401	.....	.....	2.639	.....	.....	10.000	.....	.....	.....	.....	.....
695	1415	.....do	.....	1.0173	18.66	14.81	.....	.....	10.56	.251	1 : 10.6	.465	.....	.....	2.205	.....	.....	7.990	.....	.....	.....	.....	.....
696	1416	.....do	.....	1.0225	19.07	15.14	.....	.....	12.07	.333	1 : 8.5	.406	.....	.....	2.424	.....	.....	9.340	.....	.....	.....	.....	.....
697	1417	.....do	.....	1.0252	20.00	15.87	.....	.....	13.04	.321	1 : 9.0	.422	.....	.....	2.468	.....	.....	10.250	.....	.....	.....	.....	.....

WHITE WINES—SHERRY, MADEIRA, AND WHITE LIQUEUR WINE TYPE.

250	266	Pedro Jimenes, 1884	6 to 8 months.	0.9918	12.00	9.54	.....	.....	1.17	0.387	1 : 3.0	0.555	.....	.....	0.615	.....	.....	.....	.....	.....	.....	.....	.....
278	484	Pedro Jimenes, 1886	.....do	*.9946	9.73	7.72	.....	.....	1.99	.....	.....	.587	.....	.....	1.403	.....	.....	.....	.....	.....	.....	.....	.....

325	784	Pedro Jimenes, 1887	do	.9940	9.36	7.43			2.29			.676	0.229	0.390	1.614	1 : 2.3												
344	953	Pedro Jimenes, 1888	do	.9960	9.54	7.56			2.39			.359			2.031												
372	1191	Pedro Jimenes, 1889	do	1.0000	17.00	13.48			4.00			.210			3.790												
387	1244	Pedro Jimenes, 1890	do	*.9866	20.06	15.92			7.73			.296			2.448			5.086									
437	1352	do	do	.9965	17.40	13.80			4.96			.339			2.131			2.591									
448	1404	do	do	.9905	17.20	13.64			2.06			.327			1.733												
487	1502	Pedro Jimenes, 1891	do	.9938	19.08	15.15			4.22			.298			2.292			1.729									
533	1606	do	do	.9900	21.19	16.82			3.81			.198			3.082			.634									
552	1670	Pedro Jimenes, 1892	do	.9910	18.25	14.48			4.16			.377			2.153			1.734									
251	267	Palomino, 1884	do	.9898	13.50	10.71			1.83	.247	1 : 7.4	.525			1.305												
275	384	Palomino, 1885	do	.9900	13.00	10.32			2.16	.247	1 : 8.7	.564			1.596												
308	727	Palomino, 1887	do	.9935	11.09	8.81			2.38			.467	.020	.442	1.913	1:23.3											
320	765	do	do	.9935	12.18	9.67			2.58			.437	.050	.375	2.143	1 : 8.7											
302	698	do	do	.9940	9.36	7.43			2.09			.487	.060	.412	1.603	1 : 8.1											
309	728	do	do	.9930	12.09	9.60			2.58			.467	.050	.405	2.113	1 : 9.3											
297	683	do	do	.9925	11.36	9.02			2.38			.466	.050	.404	1.914	1 : 9.3											
252	268	Perruno, 1884	do	.9922	12.35	9.81			1.93			.516			1.414												
560	1687	Perruno, 1892	do	.9900	19.96	15.84			3.96			.277			2.183			1.604									
623	1905	Perruno, 1893	do	.9900	19.00	15.07			3.46			.475			2.375			.713									
253	269	Mantuo de Pelas, 1884	do	.9920	9.82	7.79			1.31	.268	1 : 4.9	.526			.784												
254	270	Mourisco Branco, 1884	do	*.9900	14.27	11.32			2.08	.366	1 : 7.7	.495			1.585												
646	1970	Mourisco Branco, 1893	do	.9890	19.08	15.15			3.07			.297			2.773												
255	272	Verdelho, 1884	do	.9919	15.20	12.07			2.80	.327	1 : 8.7	.417			2.383												
334	867	Verdelho, 1888	do	.9920	12.27	9.74			2.68			.635			2.045												
340	914	do	do	.9903	15.20	12.07			2.92			.406			2.514												
353	1100	Verdelho, 1889	do	*.9940	13.27	10.54			2.84			.437			2.403												
377	1203	Verdelho, 1890	do	*.9893	18.22	14.45			7.49			.545			2.385			4.555									
412	1297	do	do	1.0100	16.98	13.48			7.64			.727			2.363			4.545									
472	1466	Verdelho, 1891	do	.9923	20.71	16.43			4.22			.447			2.523			1.350									
497	1518	do	do	.9900	19.78	15.70			4.85			.505			3.255												
561	1689	Verdelho, 1892	do	.9900	20.24	16.06			2.92			.356			2.564			1.188									
622	1904	Verdelho, 1893	do	.9880	19.90	15.80			3.06			.524			2.536												
256	273	Boal de Madeira, 1884	do	.9918	11.58	9.19			1.98	.258	1 : 7.7	.655			1.325												
349	1085	Boal de Madeira, 1889	do	.9918	12.91	10.25			2.28			.476			1.804												
414	1300	Boal de Madeira, 1890	do	.9960	17.00	13.48			4.34			.299			2.831			1.305									
478	1473	Boal de Madeira, 1891	do	.9869	21.19	16.82			6.00			.405			2.645			3.049									
258	275	Malmsey, 1884	do	.9928	9.91	7.87			1.59	.159	1 : 10.0	.536			1.054												
284	500	West's White Prolific, 1886.	do	.9950	9.36	7.43			2.34			.766			1.574												
286	505	do	do	.9940	9.65	7.65			2.04			.686			1.354												
299	695	West's White Prolific, 1887.	do	.9930	11.27	8.95			2.58			.536	.149	.350	2.044	1 : 3.6											
314	749	do	do	.9920	12.82	10.18			2.58			.476	.099	.352	2.104	1 : 4.8											
471	1465	West's White Prolific, 1891.	do	.9883	18.78	14.91			2.82			.326			2.494												
549	1640	West's White Prolific, 1892.	do	.9915	18.25	14.48			4.17			.516			2.164			1.487									
621	1903	West's White Prolific, 1893.	do	.9935																							
672	2069	do	do	.9880	19.35	15.38			2.82			.464			2.356												
197	24	Feher Szagos, 1881	do	.9940	8.22	6.52			1.67	.388	1 : 4.3	.557			1.113												

*Specific gravity calculated from alcohol and extract.

Analyses of samples of American wine—Continued.

CALIFORNIA WINES—Continued.

WHITE WINES—SHERRY, MADEIRA, AND WHITE LIQUEUR WINE TYPE—Continued.

No.	Laboratory No.	Variety.	Age of wine.	Specific gravity.	Per cent alcohol by volume.	Grams per 100 cc.		Glycerol-alcohol ratio.	Grams per 100 cc.		Ash-extract ratio.	Grams per 100 cc.				Volatile-acid–total-acid ratio.	Polarization.	Grams per 100 cc.					
						Alcohol.	Glycerol.		Extract.	Ash.		Total acids.	Volatile acids.	Fixed acids.	Extract, rest.			Reducing sugar.	Sodium chloride.	Potassium sulphate.	Sulphurous acid.	Proteids.	Tannin and coloring matter.
198	25	Feher Szagos, 1881	6 to 8 months.	0.9915	10.20	8.10	.....	.....	1.97	0.436	1 : 4.5	0.525	.....	.....	1.445	.....	.....	.....	.....	.....	.....	.....	.....
327	789	Feher Szagos, 1887	do	1.0365	9.73	7.72	.....	.....	.....	.....	.....	.798	0.373	0.344	.....	1 : 2.1	.....	.....	.....	.....	.....	.....	.....
488	1503	Feher Szagos, 1891	do	.9930	19.08	15.15	.....	.....	3.67	.....	.....	.387	.....	.....	1.973	.....	.....	1.410	.....	.....	.....	.....	.....
4	12628	Sherry	.....	.9904	17.94	14.24	0.703	4.9 : 100	3.30	.416	1 : 5.3	.442	.....	.....	.....	.....	— 3.1	1.190	0.0111	0.1196	.....	0.1177	0.035
40	12664	Sherry, 1882	11 years.	.9972	20.15	15.99	.324	2.0 : 100	5.56	.262	1 : 9.1	.626	.....	.....	1.764	.....	— 8.8	3.270	.0137	.0703	.....	.2867	.031
83	12711	Sherry	.....	.9870	21.85	17.34	.713	4.1 : 100	3.83	.208	1 : 11.3	.547	.....	.....	1.803	.....	— 6.0	1.580	.0045	.0516	.....	.1604	.038
174	12805	.....do	.....	.9991	19.30	15.32	.444	2.9 : 100	6.04	.296	1 : 5.7	.796	.....	.....	0.894	.....	— 7.3	4.450	.0123	.0882	.....	.3060	.041
184	12815	Sherry, 1885	8 years.	1.0127	19.48	15.46	.513	3.3 : 100	9.50	.297	1 : 11.3	.535	.....	.....	2.815	.....	—14.0	6.250	.0078	.1039	.....	.3544	.055
190	12821	Sherry	.....	1.0057	18.85	14.95	.360	2.4 : 100	8.41	.248	1 : 12.3	.380	.....	.....	2.680	.....	—11.6	5.450	.0069	.0452	.....	.2954	.050
[1]710	3044	Sherry, 1892	.....	.9909	21.37	16.96	.610	3.6 : 100	4.10	.188	1 : 10.6	.483	.045	.427	1.607	1:107.	.....	2.110	.....	.0565	.....	.....	.....
16	12640	Muscatel	.....	.9955	19.43	15.43	1.009	6.5 : 100	16.93	.191	1 : 20.5	.403	.....	.....	3.407	.....	—20.2	13.120	.0080	.0688	.....	.2178	.026
112	12740	Sweet Muscatel	.....	1.0560	13.90	11.03	.995	9.0 : 100	19.66	.156	1 : 16.3	.407	.....	.....	2.043	.....	—19.7	17.210	.0028	.0742	.....	.0859	.030
124	12752	Muscatel	.....	1.0432	19.63	15.59	.903	5.8 : 100	17.75	.....	.....	.331	.....	.....	2.279	.....	—19.3	15.140	.....	.....	.....	.2335	.021
188	12819	Dry Muscatel	.....	.9898	13.40	10.64	.604	5.7 : 100	1.77	.167	1 : 10.5	.513	.....	.....	1.257	.....	— 0.5	.119	.0045	.0818	.....	.1361	.031
125	12753	Catawba	.....	1.0411	19.32	15.34	.914	6.0 : 100	16.68	.219	1 : 9.5	.253	.....	.....	1.737	.....	—23.1	14.690	.0028	.0594	.....	.4751	0.28
63	12691	Angelica, 1890	3 years.	1.0513	17.93	14.24	.892	6.3 : 100	19.31	.184	1 : 16.6	.333	.....	.....	2.627	.....	—21.6	16.350	.0063	.1177	.....	.2234	0.26
148	12778	Angelica, 1888	5 years.	1.0333	17.28	13.82	.936	6.8 : 100	14.55	.268	1 : 8.8	.355	.....	.....	1.905	.....	—13.7	12.290	.0089	.0504	.....	.2648	0.25
189	12820	Angelica	.....	1.0443	18.86	14.97	.323	2.2 : 100	17.91	.167	1 : 16.9	.317	.....	.....	2.413	.....	—16.6	15.180	.....	.....	.....	.1240	0.35

WHITE WINES—MISCELLANEOUS DRY.

33	12657	El Quito dessert wine	.....	0.9827	19.32	15.34	0.729	4.8 : 100	2.54	0.274	1 : 9.0	0.279	.....	.....	2.261	.....	—2.3	0.18	0.0098	0.0568	.....	0.3870	.....
38	12662	Jurançon	.....	.9931	13.28	10.55	.661	6.3 : 100	2.60	.167	1 : 14.6	.615	.....	.....	1.985	.....	—0.7	.27	.0028	.0953	.....	.5525	.....
701	1503	White wine[1]	3 years	.9927	11.38	9.04	.562	6.2 : 100	1.88	.136	1 : 13.8	.670	0.119	0.521	1.210	.....	.....	.....	.....	.....	.....	.149	0.048
146	12776	Table d'hote Souvenir	.....	.9969	11.59	9.20	.588	6.4 : 100	3.14	.284	1 : 11.1	.700	.....	.....	2.440	.....	—1.6	.....	.....	.....	.....	.1443	.5358	.176
103	12731	Moselle	.....	.9928	12.52	9.94	.564	5.7 : 100	2.21	.258	1 : 8.6	.581	.....	.....	2.629	.....	—0.8	.089	.0090	.1263	.....	.2669	.....

Raisin-Grape Wines.

435	1345	Muscat of Alexandria, 1890.	6 to 8 months.	1.0020	18.98	15.07	.....	.....	6.61	.....	.....	0.411	.....	.....	2.021	.....	.....	4.278	.....	.....	.....	.....	.....	.....	.....
465	1456	Muscat of Alexandria, 1891.	.....do.....	.9880	17.90	14.19	.....	.....	2.42	.....	.....	.128	.....	.....	2.292	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
322	774	Sultana, 1887	.....do.....	*.9918	13.27	10.54	.....	.....	2.28	.....	.....	.466	0.060	0.391	1.814	1:7.8	.....	.....	.....	.....	.....	.....	.....	.....	.....
481	1483	Sultana, 1891	.....do.....	.9895	19.08	15.15	.....	.....	3.27	.....	.....	.435	.....	.....	2.835	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
568	1711	Sultana, 1892	.....do.....	.9923	11.91	9.47	.....	.....	2.68	.....	.....	.605	.....	.....	2.075	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Black Table Grapes.

324	781	Black Prince, 1887	6 to 8 months.	0.9940	12.82	10.18	.....	.....	3.08	.....	.....	0.447	.....	.....	2.633	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.239
642	1956	Black Prince, 1893	.....do.....	.9950	11.82	9.38	.....	.....	2.79	.....	.....	.458	.....	.....	2.332	.....	.....	.....	.....	.....	.....	.....	.....	.....	.101
662	2003	.....do.....	.....do.....	.9950	10.75	8.52	.....	.....	2.49	.....	.....	.428	.....	.....	2.062	.....	.....	.....	.....	.....	.....	.....	.....	.....	.071

Red Table Grapes.

312	746	Barbarossa, 1887	6 to 8 months.	0.9900	12.64	10.02	.....	.....	2.57	.....	.....	.....	0.515	.....	2.055	.....	.....	0.069	.....	.....	.....	.....	.....	.....	.....
583	1775	Barbarossa, 1892	.....do.....	.9910	11.64	9.23	.....	.....	2.42	.....	.....	.....	.644	.....	1.776	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
648	1980	Barbarossa, 1893	.....do.....	.9945	10.25	8.13	.....	.....	2.78	.....	.....	.....	.448	.....	2.332	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

American Type.

576	1767	Herbemont, 1892	6 to 8 months.	0.9460	10.58	8.39	.....	.....	2.94	.....	.....	0.727	.....	.....	2.213	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.221
660	2001	Herbemont, 1893	.....do.....	.9990	9.27	7.37	.....	.....	3.00	.....	.....	.519	.....	.....	2.481	.....	.....	.....	.....	.....	.....	.....	.....	.....	.134

IOWA WINES.

716	28	Port	.....	1.0116	13.05	10.35	.....	.....	6.97	0.180	1: 5.2	0.704	0.216	0.434	2.166	1:3.3	.....	4.200	.....	.....	.....	.....	.....	.....	.....
724	36	Claret, 1874	6 years.....	.9988	11.35	9.01	.....	.....	2.69	.239	1:11.3	.825	.332	.410	1.865	1:2.5	.....	None	.....	.....	.....	.....	.....	.....	.....
725	133	Concord, 1873	7 years.....	.9970	9.62	7.63	.....	.....	2.52	.358	1: 7.0	.720	.325	.314	1.800	1:2.2	.....	None	.....	.....	.....	.....	.....	.....	.....
726	134	White Concord, 1875..	5 years.....	1.0022	8.88	7.05	.....	.....	3.67	.158	1:16.3	.789	.305	.408	1.781	1:2.6	.....	1.200	.....	.....	.....	.....	.....	.....	.....
727	135	Norton's Virginia, 1875	.....do.....	.9983	10.38	8.24	.....	.....	2.95	.295	1:10.0	.761	.384	.281	2.189	1:2.0	.....	None	.....	.....	.....	.....	.....	.....	.....
728	136	Ives, 1874	6 years.....	1.0006	7.17	5.69	.....	.....	2.68	.193	1:13.9	.764	.275	.420	1.916	1:2.8	.....	Tr.	.....	.....	.....	.....	.....	.....	.....
729	137	Clinton, 1872	8 years.....	.9961	9.95	7.90	.....	.....	2.18	.195	1:11.2	.796	.325	.390	1.384	1:2.4	.....	None	.....	.....	.....	.....	.....	.....	.....
717	29	White Concord, 1875..	5 years.....	.9954	10.56	8.38	.....	.....	2.63	.159	1:16.5	.785	.364	.330	1.845	1:2.2	.....	None	.....	.....	.....	.....	.....	.....	.....
718	30	Iowa, 1871	9 years.....	1.0101	12.58	9.98	.....	.....	7.32	.213	1:15.8	.675	.283	.321	1.695	1:2.3	.....	4.050	.....	.....	.....	.....	.....	.....	.....
719	31	Concord, 1873	7 years.....	1.0011	7.25	5.75	.....	.....	2.80	.273	1:10.3	.705	.247	.396	2.095	1:2.9	.....	Tr.	.....	.....	.....	.....	.....	.....	.....
720	32	Norton's Virginia, 1875	5 years.....	.9996	8.01	6.36	.....	.....	2.62	.275	1: 9.5	.826	.355	.382	1.794	1:2.3	.....	Tr.	.....	.....	.....	.....	.....	.....	.....
721	33	Clinton, 1872	8 years.....	.9982	7.17	5.69	.....	.....	2.07	.192	1:10.8	.900	.487	.291	1.170	1:1.9	.....	Tr.	.....	.....	.....	.....	.....	.....	.....
722	34	St. Julien	.....	.9959	8.96	7.10	.....	.....	1.98	.209	1: 9.5	.585	.271	.246	1.395	1:2.2	.....	None	.....	.....	.....	.....	.....	.....	.....
723	35	La Rose	.....	.9987	9.95	7.90	.....	.....	2.61	.268	1: 9.7	.765	.293	.398	1.845	1:2.6	.....	None	.....	.....	.....	.....	.....	.....	.....

*Specific gravity calculated from alcohol and extract.

[1] Undetermined extract, 0.651 gram per 100 cc.

Analyses of samples of American wine—Continued.

KENTUCKY WINES.

No.	Laboratory No.	Variety.	Age of wine.	Specific gravity.	Per cent alcohol by volume.	Grams per 100 cc.		Glycerol-alcohol ratio.	Grams per 100 cc.		Ash-extract ratio.	Grams per 100 cc.				Volatile-acid–total-acid ratio.	Polarization.	Grams per 100 cc.					
						Alcohol.	Glycerol.		Extract.	Ash.		Total acids.	Volatile acids.	Fixed acids.	Extract, rest.			Reducing sugar.	Sodium chloride.	Potassium sulphate.	Sulphurous acid.	Proteids.	Tannin and coloring matter.
730	3817	Concord		1.0065	13.25	10.52			5.58	0.141	1 : 13.9	0.815	0.077	0.715	1.242	1:10.6		3.623					
731		Catawba		.9950	10.67	8.46			1.74	.144	1 : 12.1	.754			.986				.0005		.048		
732		do				10.60			1.83	.130	1 : 14.1	.696							.0037		.023		
733		Herbemont				10.66			1.38	.140	1 : 9.9	.684							.0046		.026		

MISSOURI WINES.

735	89	Concord		0.9944	10.56	8.38			1.84	0.129	1 : 14.3	0.645	0.300	0.270	1.195	1 : 2.2		Tr.					
736	90	Virginia Seedling		.9938	12.05	9.56			2.05	.217	1 : 9.4	.660	.348	.225	1.390	1 : 1.9		Tr.					
737	91	Claret		.9937	11.52	9.15			1.96	.188	1 : 10.4	.660	.300	.285	1.300	1 : 2.2		Tr.					
738	92	Burgundy		.9940	11.52	9.15			2.02	.209	1 : 9.7	.660	.177	.439	1.360	1 : 3.7		Tr.					
739	93	Missouri Catawba		.9911	11.08	9.00			1.66	.128	1 : 13.0	.765	.305	.384	.895	1 : 2.5		Tr.					
734	88	"Imperial" Champagne.		1.0207	10.82	8.59			8.65	.137	1 : 9.3	.795	.252	.480	.575	1 : 3.2		7.380					
740	101	do		1.0222	9.04	7.17			7.97	.117	1 : 7.6	.870	.360	.420	.020	1 : 2.4		7.180					
741	155	Ives's Seedling, 1880	Less than 1 year.	.9925	11.79	9.36			1.97	.236	1 : 8.3	.564	.223	.285	1.406	1 : 2.5		Tr.					
742	156	Riesling, 1880	do	.9956	10.38	8.24			1.99	.334	1 : 6.0	.600	.202	.348	1.390	1 : 3.0		None					
743	157	Cynthiana, 1880	do	.9952	11.61	9.22			2.65	.341	1 : 7.8	.558	.217	.287	2.092	1 : 2.6		Tr.					
744	158	Clinton, 1880	do	.9894	15.21	12.07			2.18	.282	1 : 7.7	.534	.183	.305	1.646	1 : 2.9		Tr.					
745	159	Ruländer, 1880	do	.9914	13.05	10.35			1.88	.197	1 : 9.5	.540	.192	.300	1.340	1 : 2.8		Tr.					
746	160	Virginia Seedling, 1880	do	.9950	12.40	9.84			2.99	.363	1 : 8.2	.492	.152	.302	2.498	1 : 3.2		Tr.					
747	161	Delaware, 1880	do	.9932	11.70	9.25			1.87	.253	1 : 7.4	.558	.183	.331	1.312	1 : 3.0		Tr.					
748	162	Concord, 1880	do	.9913	12.96	10.28			1.74	.231	1 : 7.5	.492	.154	.300	1.248	1 : 3.2		Tr.					
749	163	Herbemont, 1880	do	.9928	9.83	7.80			1.59	.145	1 : 11.0	.558	.207	.299	1.032	1 : 2.7		None					
750	164	Catawba, 1880	do	.9934	10.82	8.59			1.62	.177	1 : 9.2	.570	.169	.359	1.050	1 : 3.4		Tr.					
751	165	Taylor, 1880	do	.9921	12.96	10.28			1.97	.182	1 : 10.8	.726	.329	.315	1.244	1 : 2.2		Tr.					
752	166	Goethe, 1880	do	.9962	10.73	8.52			1.84	.222	1 : 8.3	.690	.313	.299	1.150	1 : 2.2		Tr.					

NEW JERSEY WINES.

753	15	Black Rose		0.9920	12.31	9.77			1.92	0.169	1 : 11.4	0.750	0.372	0.285	1.70	1 : 2.0		Tr.					
754	74	Ruby Claret, 1875	5 years	.9910	12.13	9.62			2.20	.155	1 : 14.2	.719	.199	.470	1.481	1 : 3.6		Tr.					
755	75	Ruby Claret, 1876	4 years	.9917	12.87	10.21			2.04	.184	1 : 11.1	.690	.184	.360	1.350	1 : 3.8		Tr.					
756	76	Ruby Claret, 1877	3 years	.9927	11.96	9.50			1.93	.164	1 : 11.8	.690	.204	.435	1.240	1 : 3.4		Tr.					
757	77	Ruby Claret, 1878	2 years	.9902	14.74	11.69			1.85	.148	1 : 12.5	.660	.391	.171	1.190	1 : 1.7		Tr.					
758	78	Ruby Claret, 1879	1 year	.9918	12.68	10.06			1.82	.153	1 : 11.9	.645	.199	.396	1.175	1 : 3.2		Tr.					
759	79	Ruby Claret, 1880	Less than 1 year.	.9922	13.43	10.65			1.81	.182	1 : 9.9	.540	.137	.369	1.270	1 : 3.9		Tr.					
760	80	Clevener, 1876	4 years	.9984	8.80	6.98			2.15	.250	1 : 8.6	.510	.198	.263	1.640	1 : 2.6		Tr.					
761	81	Cynthiana, 1876	do	.9939	9.95	8.00			2.27	.207	1 : 11.0	.765	.192	.525	1.505	1 : 4.0		Tr.					
762	82	Franklin, 1876	do	.9945	10.82	8.59			2.00	.179	1 : 11.2	.720	.300	.345	1.280	1 : 2.4		Tr.					
763	83	Norton's Virginia, 1877	3 years	.9914	12.96	10.28			1.85	.165	1 : 11.2	.630	.276	.285	1.220	1 : 2.3		Tr.					
764	84	Franklin, 1868	12 years	.9955	11.00	8.73			2.31	.165	1 : 14.0	.855	.396	.360	1.455	1 : 2.2		Tr.					
765	85	Jersica, 1868	do	.9919	12.05	9.56			1.89	.137	1 : 13.8	.720	.348	.285	1.170	1 : 2.1		Tr.					
766	86	Catawba, 1868	do	.9944	8.96	7.10			1.43	.166	1 : 8.6	.795	.278	.448	.635	1 : 2.9		Tr.					
767	87	Iolhink, 1868	do	.9935	10.91	8.66			1.95	.150	1 : 13.0	.824	.403	.504	1.126	1 : 2.0		Tr.					

NEW MEXICO WINES.

768	128	Native wine, 1877	3 years	0.9894	13.15				1.78	0.272		0.480	0.288	0.360	1.300			Tr.					

NEW YORK WINES.

769	24	"Great Western" Extra Dry Champagne.		1.0268	11.10	8.81			10.69	0.135	1 : 10.3	0.840	0.372	0.375	0.630	1 : 2.3		9.320					
770	40	American Port		1.0207	17.70	14.05			10.03	.145	1 : 15.2	.825	.212	.560	1.375	1 : 3.9		7.930					
771	44	Sweet Catawba		1.0219	16.70	13.25			11.37	.123	1 : 18.6	.530	.112	.390	1.660	1 : 4.7		9.180					
772	45	Dry Catawba		.9903	13.71	10.88			2.98	.134	1 : 22.2	.825	.279	.476	2.155	1 : 3.0		Trace					
773	129	Port		1.0296	14.84	11.77			11.79	.196	1 : 12.4	.714			1.726			9.450					
774	130	Dry Catawba		.9928	13.15	10.43			2.17	.136	1 : 16.0	.538	.068	.453	1.632	1 : 7.9							
775	131	Sweet Catawba		1.0231	17.26	13.70			11.03	.143	1 : 14.3	.375	.065	.294	1.675	1 : 5.8		9.080					
776	132	Great Western Champagne.		1.0285	10.82	8.59			11.39	.134	1 : 18.3	.515	.191	.276	.935	1 : 2.7		9.040					
777	184	Sweet Catawba		1.0199	19.78	15.70			11.65	.129	1 : 16.0	.571	.125	.415	1.599	1 : 4.6		9.680					

*Specific gravity calculated from alcohol and extract.

Analyses of samples of American wine—Continued.

NORTH CAROLINA WINES.

No.	Laboratory No.	Variety.	Age of wine.	Specific gravity.	Per cent alcohol by volume.	Grams per 100 cc.		Glycerol-alcohol ratio.	Grams per 100 cc.		Ash-extract ratio.	Grams per 100 cc.				Volatile-acid-total-acid ratio.	Polarization.	Grams per 100 cc.					
						Alcohol.	Glycerol.		Extract.	Ash.		Total acids.	Volatile acids.	Fixed acids.	Extract, rest.			Reducing sugar.	Sodium chloride.	Potassium sulphate.	Sulphurous acid.	Proteids.	Tannin and coloring matter.
778	94	Norton's Virginia Claret, 1880.	Less than 1 year.	0.9962	15.40	12.22	.....	.....	3.60	0.126	1 : 19.0	0.825	0.424	0.295	1.565	1 : 2.0	.....	1.310	.....	.....	.....	.....	.....
779	95	Sweet Delaware, 1879	1 year	1.0320	11.35	9.01	.....	.....	12.46	.122	1 : 16.1	.825	.366	.373	1.135	1 : 2.3	.....	10.600	.....	.....	.....	.....	.....
780	96	Sweet Concord, 1880	Less than 1 year.	1.0224	10.91	8.66	.....	.....	8.60	.135	1 : 10.5	.614	.198	.367	0.806	1 : 3.1	.....	7.28	.....	.....	.....	.....	.....
781	97	Dry Concord	.....	1.0069	11.44	9.09	.....	.....	3.93	.186	1 : 17.3	.795	.312	.405	2.435	1 : 2.6	.....	0.810	.....	.....	.....	.....	.....
782	98	"Scuppernong," 1880	Less than 1 year.	1.0100	10.82	8.59	.....	.....	5.77	.112	1 : 36.3	.659	.324	.254	3.411	1 : 2.0	.....	1.800	.....	.....	.....	.....	.....
783	99	"Scuppernong," Sweet, 1878.	2 years	1.0404	11.87	9.43	.....	.....	14.70	.137	1 : 20.2	.789	.362	.337	0.981	1 : 2.2	.....	12.030	.....	.....	.....	.....	.....
784	100	"Scuppernong," Dry, 1879.	1 year	.9948	13.43	10.65	.....	.....	3.37	.107	1 : 20.3	.920	.461	.344	1.250	1 : 2.0	.....	1.300	.....	.....	.....	.....	.....

OHIO WINES.

785	.....	Concord	2 years	0.9921	15.01	11.91	0.545	4.6 : 100	1.91	0.139	1 : 13.7	0.337	.....	.....	1.573	.....	.....	0.110	.....	.....	.....	0.044	.....
786	.....	Ives	1 year	.9971	10.62	8.43	.419	5.0 : 100	1.61	.140	1 : 11.4	.359	.....	.....	1.251	.....	.....	.120	.....	.....	.....	.056	.....
787	.....	Hayse	.....do	.9959	9.91	7.87	.359	4.6 : 100	1.50	.139	1 : 10.7	.289	.....	.....	1.211	.....	.....	.110	.....	.....	.....	.050	.....
788	.....	Catawba[1]	2 years	1.0010	13.54	10.51	.511	4.9 : 100	3.66	.150	1 : 14.8	.400	0.031	0.361	1.720	1 : 12.9	.....	1.540	.....	.....	.....	.044	.....
789	.....	.....do[2]	.....do	.9918	14.25	11.31	.496	4.4 : 100	1.98	.119	1 : 16.6	.327	.021	.301	1.653	1 : 15.6	.....	.070	.....	.....	.....	.081	.....
790	.....	.....do[3]	.....do	.9972	11.09	8.80	.947	10.8 : 100	3.85	.120	1 : 32.1	.459	.299	.085	3.391	1 : 1.5	.....	.....	.....	.....	.....	.....	.....
791	.....	Centennial[4]	1 year	.9934	10.27	8.15	.397	4.9 : 100	1.27	.109	1 : 11.6	.377	.199	.126	.893	1 : 1.9	.....	.110	.....	.....	.....	.032	.....
792	.....	Werden[5]	.....do	.9970	9.31	7.38	.419	5.7 : 100	1.80	.130	1 : 7.5	.449	.110	.312	.551	1 : 4.1	.....	.920	.....	.....	.....	.069	.....
793	.....	Hartford	.....do	.9977	6.41	5.09	.289	5.7 : 100	1.55	.150	1 : 10.2	1.140	.120	1.125	.410	1 : 9.5	.....	.120	.....	.....	.....	.032	.....
794	.....	Delaware[6]	.....do	.9909	14.37	11.40	.446	3.9 : 100	1.63	.119	1 : 13.7	.377	.069	.291	1.253	1 : 5.5	.....	.100	.....	.....	.....	.105	.....
795	.....	Riesling	.....do	.10060	4.18	3.32	.392	11.8 : 100	2.30	.121	1 : 19.0	1.840	.....	.....	.460	.....	.....	.100	.....	.....	.....	.050	.....
796	.....	Niagara[7]	.....do	.9931	10.97	8.71	.497	5.7 : 100	1.57	.099	1 : 15.8	.328	.119	.179	1.242	1 : 2.8	.....	.110	.....	.....	.....	.050	.....
797	27	Gold Seal Champagne	.....do	1.0402	10.82	8.59	.....	.....	13.85	.114	1 : 12.7	.915	.360	.870	.535	1 : 2.5	.....	12.500	.....	.....	.....	.....	.....
798	55	Sans Pareil Champagne.	.....do	1.0272	7.48	5.93	.....	.....	9.24	.151	1 : 2.4	.885	.348	.450		1 : 2.5	.....	8.980	.....	.....	.....	.....	.....

799	118	"A. A." Catawba	do	.9929	9.62	7.63			1.28	.191	1 : 6.7	.705	.359	.256	.575	1 : 2.2									
800	119	"A. A. A." Catawba	do	.9912	11.35	9.01			1.27	.163	1 : 7.8	.765	.368	.305	.505	1 : 2.1		Tr.							
801	120	I. and N., 1880	Less than 1 year.	.9949	10.30	8.17			2.08	.316	1 : 6.6	.750	.312	.360	1.330	1 : 2.4									
802	121	Norton, 1880	do	.9888	15.12	12.00			2.29	.174	1 : 13.2	.510	.204	.255	1.680	1 : 2.5		Tr.							
803	122	Ives, 1880	do	.9961	8.27	6.56			1.71	.197	1 : 8.7	.600	.204	.345	1.110	1 : 2.9		Tr.							
804	123	Delaware		.9940	8.80	6.98			1.50	.253	1 : 5.9	.660	.348	.225	.840	1 : 1.9									
805	124	Concord, 1880	Less than 1 year.	.9947	10.21	8.10			2.16	.208	1 : 10.4	.615	.216	.345	1.545	1 : 2.9									
806	167	Sans Pareil Champagne.		1.0308	10.47	8.31			10.62	.158	1 : 10.4	.851	.164	.646	.789	1 : 5.2		9.080							
807	168	Le Diamant		1.0217	10.82	8.59			8.92	.141	1 : 9.4	.576	.125	.420	.749	1 : 4.6		7.700							
808	169	Norton's Virginia Red Champagne.		1.0188	8.01	6.36			8.74	.167	1 : 8.1	.705	.145	.524	.755	1 : 4.9		7.380							

VIRGINIA WINES.

809	1	Virginia Claret, Alvey grapes.		0.9949	12.34	9.80			1.77	0.239	1 : 7.4	0.786	0.149	0.600	0.984	1 : 5.3		0.070				0.083	0.018
810	2	Virginia Hock, Concord grapes.	2 years	.9932	10.71	8.50			1.83	.169	1 : 10.8	.526	.070	.439	1.304	1 : 7.5		.058				.121	.004
811	3	Bacchantes, Concord grapes.	4 years	.9941	12.51	9.93			1.51	.139	1 : 10.9	.537	.149	.351	.973	1 : 3.6		.047				.083	.019
812	4	Concord (claret), Concord grapes.		.9926	12.60	10			1.59	.149	1 : 10.7	.605	.129	.444	.985	1 : 4.7		.045				.038	.011
813	5	Sweet Concord, Concord grapes.	4 years	1.0050	14.93	11.85			5.14	.131	1 : 15.7	.663	.392	.173	1.399	1 : 1.7		3.178				.038	.006
814	6	Ives (claret), Ives's grapes.		.9913	13.90	11.03			1.60	.119	1 : 13.4	.724	.119	.575	.876	1 : 6.1		.065				.051	.009
815	7	Delaware, Delaware grapes.	2 years	.9931	11.84	9.40			1.97	.238	1 : 8.3	.546	.100	.421	1.424	1 : 5.5		.075				.090	.008
816	8	Sweet Delaware, Delaware grapes.	4 years	1.0117	13.48	10.69			6.48	.172	1 : 16.5	.728	.567	.019	2.106	1 : 1.3		3.746				.059	.006
817	9	Delaware (Hock), Delaware grapes.		.9875	15.79	12.53			1.40	.119	1 : 11.8	.513	.079	.414	.887	1 : 6.5		.105				.101	.002
818	10	Catawba (Hock), Catawba grapes.		.9902	12.52	9.94			1.40	.129	1 : 10.9	.624	.159	.425	.776	1 : 3.9		.031				.076	.003
819	11	Norton, Norton's Virginia grapes.	2 years	.9953	13.25	10.52			2.65	.309	1 : 8.5	.756	.219	.482	1.894	1 : 3.5		.111				.114	.019
820	12	Dry Norton's Virginia, Norton's Virginia grapes.		.9981	14.83	11.77			3.54	.200	1 : 12.1	1.018	.409	.507	1.396	1 : 2.5		1.226				.102	.011
821	16	Virginia Claret, 1879	1 year	.9953	11.08	8.80			2.09	.173	1 : 12.1	.706	.265	.375	1.384	1 : 2.7		Tr.					
822	17	Virginia Clinton, 1879	do	.9950	12.31	9.77			2.35	.237	1 : 9.9	.780	.216	.510	1.570	1 : 3.6							
823	18	Cynthiana, 1880	Less than 1 year.	.9969	12.87	10.21			2.94	.282	1 : 10.4	.645	.216	.375	2.295	1 : 3.0		.090					

[1] Undetermined extract, 1.098 grams per 100 cc.
[2] Undetermined extract, 0.994 gram per 100 cc.
[3] Undetermined extract, 2.698 grams per 100 cc.
[4] Undetermined extract, 0.528 gram per 100 cc.
[5] Undetermined extract, 0.019 gram per 100 cc.
[6] Undetermined extract, 0.674 gram per 100 cc.
[7] Undetermined extract, 0.685 gram per 100 cc.

Analyses of samples of American wine—Continued.

VIRGINIA WINES—Continued.

No.	Laboratory No.	Variety.	Age of wine.	Specific gravity.	Per cent alcohol by volume.	Grams per 100 cc.		Glycerol-alcohol ratio.	Grams per 100 cc.		Ash-extract ratio.	Grams per 100 cc.				Volatile-acid–total-acid ratio.	Polarization.	Grams per 100 cc.						
						Alcohol.	Glycerol.		Extract.	Ash.		Total acids.	Volatile acids.	Fixed acids.	Extract, rest.			Reducing sugar.	Sodium chloride.	Potassium sulphate.	Sulphurous acid.	Proteids.	Tannan and coloring matter.
824	19	Alvey, 1880	Less than 1 year.	0.9931	12.22	9.69	.....	.....	2.12	0.173	1 : 12.3	0.675	0.145	0.494	1.445	1 : 4.7	.....	Tr.	.....	.....	.....	.....	.....
825	20	Norton's Virginia, 1879	1 year	.9937	12.77	10.13	.....	.....	2.86	.296	1 : 9.7	.767	.312	.377	2.093	1 : 2.5	.....	Tr.	.....	.....	.....	.....	.....
826	21	Virginia Hock, 1879	do	.9905	11.96	9.50	.....	.....	1.38	.163	1 : 8.5	.630	.204	.375	.750	1 : 3.1	.....	Tr.	.....	.....	.....	.....	.....
827	22	Ives's Seedling, 1879	do	.9944	10.82	8.59	.....	.....	2.17	.246	1 : 8.8	.719	.168	.509	1.451	1 : 4.3	.....	Tr.	.....	.....	.....	.....	.....
828	56	"Old Dominion" Claret	.....	.9970	7.74	6.14	.....	.....	1.65	.169	1 : 9.5	.705	.343	.276	.905	1 : 2.1	.....	.140	.....	.....	.....	.....	.....
829	59	Concord, 1880	Less than 1 year.	.9933	10.91	8.66	.....	.....	2.37	.184	1 : 11.0	.615	.228	.330	1.405	1 : 2.7	.....	.450	.....	.....	.....	.....	.....
830	60	Clinton, 1880	do	.9920	13.62	10.80	.....	.....	2.47	.164	1 : 13.8	.615	.252	.300	1.655	1 : 2.4	.....	.300	.....	.....	.....	.....	.....
831	61	Ives, 1880	do	.9925	10.82	8.59	.....	.....	2.15	.151	1 : 13.6	.675	.252	.360	1.375	1 : 2.7	.....	.200	.....	.....	.....	.....	.....
832	62	Norton's Virginia Seedling, 1880.	do	.9941	11.26	8.94	.....	.....	2.37	.221	1 : 10.6	.658	.282	.306	1.712	1 : 2.3	.....	.120	.....	.....	.....	.....	.....
833	63	Ives and Clinton, 1880	do	.9920	12.05	9.56	.....	.....	2.15	.182	1 : 11.8	.630	.208	.370	1.520	1 : 3.0	.....	Tr.	.....	.....	.....	.....	.....
834	64	Ives and Clinton, 1879	1 year	.9936	11.61	9.22	.....	.....	2.47	.207	1 : 11.9	.704	.256	.384	1.766	1 : 2.8	.....	Tr.	.....	.....	.....	.....	.....
835	65	Concord and Clinton, 1879.	do	.9943	12.22	9.69	.....	.....	2.37	.201	1 : 11.8	.750	.284	.395	1.620	1 : 2.6	.....	Tr.	.....	.....	.....	.....	.....
836	125	Mount Vernon	.....	.9962	9.70	7.70	.....	.....	2.06	.201	1 : 9.3	.666	.305	.285	1.194	1 : 2.2	.....	.300	.....	.....	.....	.....	.....
837	126	"Old Dominion" Claret	.....	.9967	8.80	6.98	.....	.....	2.38	.152	1 : 15.7	.779	.312	.389	1.601	1 : 2.5	.....	Tr.	.....	.....	.....	.....	.....
838	127	Prince William	.....	.9945	12.77	10.13	.....	.....	3.14	.295	1 : 10.6	.695	.304	.315	2.445	1 : 2.3	.....	Tr.	.....	.....	.....	.....	.....
839	178	Catawba, 1880	Less than 1 year.	.9937	9.54	7.57	.....	.....	1.38	.147	1 : 9.4	.750	.348	.315	.630	1 : 2.2	.....	Tr.	.....	.....	.....	.....	.....
840	180	Red Concord	.....	.9953	9.21	7.31	.....	.....	1.86	.196	1 : 9.5	.834	.288	.474	1.026	1 : 2.9	.....	.....	.....	.....	.....	.....	.....
841	181	Clinton	.....	.9944	11.61	9.22	.....	.....	2.49	.216	1 : 11.5	.774	.234	.482	1.716	1 : 3.3	.....	.....	.....	.....	.....	.....	.....
842	182	Norton	.....	.9933	13.34	10.59	.....	.....	2.68	.356	1 : 7.5	.630	.247	.321	2.050	1 : 2.6	.....	.....	.....	.....	.....	.....	.....
843	5094	Virginia claret[1]	.....	.9943	11.20	8.99	.514	5.7 : 100	1.51	.223	1 : 6.8	.477	.131	.313	1.010	1 : 3.6	.....	.123	.....	.....	.....	.....	.....
844	5099	.....do[2]	.....	.9949	10.47	8.39	.419	5.0 : 100	1.42	.305	1 : 4.7	.552	.220	.277	.868	1 : 2.5	.....	.051	.....	.....	.....	.....	.....
845	5101	.....do[3]	.....	.9969	9.68	7.76	.489	6.3 : 100	1.81	.251	1 : 7.2	.703	.084	.598	1.107	1 : 8.4	.....	.....	.....	.....	.....	.....	.....

[1] Undetermined extract, 0.337 gram per 100 cc. [2] Undetermined extract, 0.368 gram per 100 cc. [3] Undetermined extract, 0.473 gram per 100 cc.

INTERPRETATION OF ANALYTICAL RESULTS.

In interpreting the analytical results obtained in the analysis of wines considerable discretion must be used. While the vast majority of wines from one locality will be fairly constant in composition, occasionally one will be found which will vary greatly from the average. Climate, location, vintage, age, and methods of preparation will influence to a marked extent the character and composition of a wine. Standards should therefore be adopted for the wines produced in each country, and all these influences should be taken into consideration before condemning wines of apparently abnormal composition.

This question has been carefully studied in several European countries. Countless analyses of wines grown in those countries have been made by official laboratories, and as a result of these analyses standards have been adopted which have a certain official weight. Owing to this fact there is a tendency to judge American wines by the standards adopted for those of European origin.

This practice is not justified by our knowledge of the composition of American wines, and it is highly important that both our grapes and wines should be studied, in order that American standards may be adopted. Owing to the small number of wines of known origin, which have been examined in other States than California, we know practically nothing of their composition.

For the sake of comparison a summary is given, which is believed to include all the important points taken into consideration in interpreting the results of wine analysis in Germany, Austria-Hungary, and France, and also as many suggestions as seem advisable at this time concerning the interpretation of California wines. The latter are taken entirely from a communication from Mr. Marvin Curtis, of the firm of J. M. Curtis & Son, No. 123 California street, San Francisco, Cal. Mr. Curtis states that their firm "occupies the position of reference chemists between the wine makers on the one hand and the dealers and consumers on the other." It is believed that there is no one better able to make suggestions along this line than Mr. Curtis, and that his suggestions will be perfectly fair to both sides.

ALCOHOL.

According to the German Weinstatistik Commission a pure wine usually contains between 4.5 and 10 grams of alcohol per 100 cc, although wines of known purity have been found to contain as low as 2.1 grams of alcohol and as high as 12.19 grams. American wines commonly have a somewhat higher content of alcohol than those of the countries mentioned. This is especially true of the wines made in many of the warmer districts of California. Fermentation does not yield more than 14.5 grams of alcohol per 100 cc.

The percentage of alcohol is not as important as certain ratios between alcohol and other constituents.

GLYCEROL.

The amount of glycerol ordinarily present varies between 0.40 gram and 1 gram per 100 cc. In the records of the Weinstatistik Commission pure wines are noted whose glycerol content is between 0.20 and 1.39 grams per 100 cc, but cases which do not come within the first-named limits are very rare. Unfortunately this determination is one which has seldom been made on American wines. In those recorded herein the lowest glycerol content is .163 and the highest 1.083 grams.

GLYCEROL-ALCOHOL RATIO.

The glycerol-alcohol ratio is considered of great importance in judging of the purity of a wine. The German Weinstatistik Commission decided in 1884 that in pure wines the glycerol-alcohol ratio might vary between 7 and 14 parts by weight of the former to 100 parts of the latter. It is now quite generally admitted that the German wines are not all included within these limits and that the minimum limit should be reduced to 6 parts of glycerol to 100 parts of alcohol.

The glycerol-alcohol ratio of American wines seems to be much lower than that of wines of European origin. If we were to take 6 of the former to 100 of the latter as the minimum, in the analyses which have been made, a large number of pure wines would be condemned.

While no conclusions should be drawn until more work has been done on this subject, and many analyses have been made of wines manufactured under known conditions, it seems that a much lower glycerol-alcohol ratio will be found to be necessary.

SUGAR-FREE EXTRACT.

The sugar-free extract is found by subtracting the sugar present, in excess of 0.1 gram per 100 cc from the total extract as determined by evaporation. In the case of plastered wines the potassium sulphate in excess of 0.1 gram per 100 cc is also deducted. The German Weinstatistik Commission has found that wine made from the juice of ripe grapes rarely contains less than 1.5 grams of extract per 100 cc, and that figure has been adopted as the lowest limit for the German wines. At a recent meeting of the Weinstatistik Commission it was held that the above limit was too low, and the commission seriously considered the advisability of changing the limit to 1.6 grams per 100 cc for white wines and 1.8 grams per 100 cc for red wines. It is necessary that somewhat wider limits should be adopted for American wines.

Mr. Curtis considers that the average extract content of wine six months old is 2.90 grams of extract per 100 cc for red wines and 2 grams per 100 cc for white wines. The extract, of course, decreases with the age of the wine. When over two or three years of age Mr. Curtis gives as the average extract content 2.65 grams for red wines and 1.75 grams for white wines. He regards with suspicion a red wine which contains less than 2.40 grams or more than 3.25 grams of extract per 100 cc, and a white wine which contains less than 1.50 grams or more than 2.40 grams of extract per 100 cc.

ASH.

The maximum and minimum for ash content, estimated by the German Weinstatistik Commission are, respectively, 0.44 gram and 0.11 gram per 100 cc. It rarely happens, however, that 0.35 gram is exceeded. A wine is regarded as suspicious whose ash content is less than 0.14 gram. The ash content may be somewhat diminished by the separation of the cream of tartar, and somewhat increased by the neutralization of the excess of acidity and by the addition of sodium chloride.

The amount of ash which a normal wine may contain depends to a considerable extent on its composition in other respects, especially on the amount of sulphuric acid present. The presence of a high content of sodium chloride or potassium sulphate in a wine, having a minimum ash content, would be regarded as suspicious.

It seems probable that the same standards for ash content may be adopted for American wines. Mr. Curtis writes that he considers the average ash content for American wines six months old to be 0.28 gram per 100 cc for red wines and 0.21 gram per 100 cc for white wines. He regards as suspicious a red wine containing less than 0.22 gram of ash per cc or more than 0.34 gram, and a white wine containing less than 0.14 gram or more than 0.26 gram per 100 cc.

EXTRACT-ALCOHOL RATIO.

The municipal laboratory of Paris considers a wine to be fortified when, in case of red wines, the alcohol (expressed in grams per 100 cc) exceeds 4.5 times the extract, and, in the case of white wines, the alcohol exceeds 6.5 times the extract. The amount of added alcohol is calculated by the municipal laboratory by subtracting the "natural" alcohol (extract$\times$4.5 or extract$\times$6.5) from the total alcohol.

When the sum of the percentage of alcohol by volume and the grams of total acids per liter, expressed as sulphuric acid (H_2SO_4), is less than 12.5 the wine is considered to be diluted with water. The total acids expressed as grams of tartaric acid per 100 cc may be multiplied by 6.53 for the grams of sulphuric acid per liter.

In case the wine is shown to have received an addition of alcohol, and a figure greater than 12.5 is obtained by adding together the volume per cent of alcohol and the total acidity expressed as grams of sulphuric acid per liter, the volume per cent corresponding to the per cent by weight of "natural" alcohol is added to the total acidity expressed as grams of sulphuric acid per liter (6.53 × grams tartaric per 100 cc). If the sum thus obtained is less than 12.5 the wine is considered by the municipal laboratory to have received additions of both water and alcohol.

TOTAL ACIDS.

European wines rarely contain less than 0.40 gram or more than 1.5 grams of total acids, calculated as tartaric, per 100 cc. The acid content is often diminished by aging, by the separation of cream of tartar, and by the action of certain micro-organisms. On the other hand, it may be increased by concentration and by the formation of succinic and lactic acids.

Mr. Curtis found the average total acid content in California wines six months old to be 0.525 per cent for red wines and 0.570 per cent for white wines. He regards as suspicious a wine which contains less than 0.450 per cent.

VOLATILE ACIDS.

Marked variations have been noticed in the volatile-acid content of wines made in dissimilar climates. This is probably largely due to the differences in the temperature of fermentation. According to the Freie Vereinigung bayerischer Vertreter der angewandten Chemie a white wine containing more than 0.09 gram of volatile acids per 100 cc or a red wine containing more than 0.12 gram is to be regarded as abnormal, and a white wine containing more than 0.12 or a red wine containing more than 0.16 gram is to be condemned.

It seems probable that wider limits are necessary for the American wines. While it is true that excessive acidity is objectionable, and that as the methods of fermentation are more nearly perfected the volatile-acid content is reduced, yet it is possible that with like methods of fermentation the American wines will give a somewhat higher volatile-acid figure than many of the European wines. In this respect the American wines have improved very much in the last few years. It is believed that if the products of the wineries whose samples are described in this bulletin could now be examined the volatile-acid content would be very much lower. A marked improvement has been made in this respect in California wines in the past few years, as

will be shown by the following extract, taken from a letter from Mr. Marvin Curtis:

Some years ago we established the precedent of rejecting all wines whose volatile acid, calculated as acetic, exceeded one-fourth of the total free acid, calculated as tartaric. This we did after making many analyses, both chemical and microscopical, of wines of different ages. Of course this ratio in some cases is absurd, for if a wine contains 0.8 per cent of free acid and 0.18 to 0.20 per cent of volatile acid we would condemn it unless it was an old wine, say, of four or five years. I deprecate this method of passing on a wine by proportion of volatile to free acid, as it allows too much leeway, and if you get a wine high in volatile and yet within the ratio and reject a wine which is lower in volatile but of a higher ratio to the free it brings the whole system into disrepute.

But at the time of establishing this ratio there was so much bad wine made that if we had attempted to make any fixed standard we would either have had to put a very high figure, or reject half of the wine produced. Now, however, I think the time has come to change this standard and to have a definite figure. I favor for our California wines up to say, 3 years old, a maximum standard of 0.14 per cent for volatile acid. This figure is fair and our wine makers can easily keep inside of it, for, after all, excessive volatile acid is simply the result of carelessness in fermentation and in handling the wine. The German limit of 0.12 per cent is too low for us, especially for our red wines, and would work much harm.

UNDETERMINED EXTRACT.

The undetermined extract is obtained by deducting the sum of the glycerol, ash, fixed acids, and the sugar in excess of 0.1 gram, from the total extract. This figure is sometimes of value in judging of the purity of a wine. As a result of his study of German wines Borgmann states that white wines should contain at least 0.30 gram per 100 cc, and rarely more than 0.6 gram per 100 cc of undetermined extract. This is especially important in wine whose extract content is very low, as in such cases it very often assists in determining whether or not addition has been made to increase the percentage of extract to the minimum limit. A high undetermined extract should accompany a high percentage of alcohol and a low acid content.

In American wines so few complete analyses have been made that we have no knowledge of the value of the undetermined extract as a criterion of their purity.

POLARIZATION.

(1) *The wine shows no rotation.*

This may be due to the absence of any rotatory body, or to the simultaneous presence of dextrorotatory and levorotatory sugars.

(*a*) THE WINE IS INVERTED.—A levorotation shows that the sample contains cane sugar.

(*b*) THE WINE IS FERMENTED.—A dextrorotation shows that both levorotatory sugar and the unfermentable constituents of commercial dextrose were present.

If no change takes place in either (*a*) or (*b*) in the rotation, it proves the absence of unfermented cane sugar, the unfermentable constituents of commercial dextrose, and of levorotatory sugar.

(2) *The wine rotates to the right.*

This may be caused by unfermented cane sugar, commercial glucose, or both.

(*a*) THE WINE IS INVERTED.

(a_1) *It rotates to the left after inversion.*—Unfermented cane sugar is present.

(a_2) *It rotates more than 2.3° to the right.*—Commercial glucose or its unfermentable constituents are present.

(a_3) *It rotates less than 2.3° and more than 0.9° to the right.*—It is in this case treated as follows:

Two hundred and ten cc of the wine are evaporated to about one-third its volume to remove the alcohol, cooled, diluted with water to the original volume, and fermented after evaporating alcohol, with 1 or 2 grams of pressed yeast. The fermented liquid is evaporated in a porcelain dish to a thin sirup with a little sand and a few drops of a 20 per cent solution of potassium acetate added. To the residue 200 cc of 90 per cent alcohol are added, with constant stirring. The alcoholic solution is filtered into a flask, and the alcohol removed by distillation until about 5 cc remain. The residue is mixed with washed boneblack, filtered into a graduated cylinder, and washed until the filtrate amounts to 30 cc. When the filtrate shows a dextrorotation of more than 1.5° it indicates the presence of the unfermentable constituents of commercial glucose.

(3) *The wine rotates to the left.*

It contains unfermented levorotatory sugar, derived either from the must or from the inversion of added cane sugar. It may, however, also contain unfermented cane sugar and the unfermentable constituents of commercial glucose.

(*a*) The wine is fermented.

(a_1) It polarizes—3° after fermentation. It contains only levorotatory sugar.

(a_2) It rotates to the right. It contained both levorotatory sugar and the unfermentable constituents of commercial dextrose.

(*b*) The wine is inverted.

(b_1) It is more strongly levorotatory after inversion. It contains both levorotatory sugar and unfermented cane sugar.

REDUCING SUGARS.

Dry wines are supposed to be almost completely fermented, and their content of reducing sugars should rarely exceed 0.1 gram per 100 cc. In many of the analyses given in this bulletin this quantity is largely overreached, although with the perfection of methods of fermentation the percentage of sugar in dry wines is reduced.

The Municipal Laboratory of Paris calculates the sugar content of the original must from which the wine was made. It has been determined that French musts never contain more than 32.5 grams of sugar per 100 cc. If, therefore, the sum of the sugar and twice the alcohol content of a wine, both expressed in grams per 100 cc, exceed 32.5 grams per 100 cc, it is held that French wines have received an addition of either sugar or alcohol.

POTASSIUM SULPHATE.

The quantity of sulphuric acid may be increased by sulphuring the casks, by the addition of sodium sulphite as a bleaching agent and

preservative, and by plastering. Plastering is rarely resorted to in northern wine districts of Europe, and this is also probably true of American wines.

The maximum quantity of sulphuric acid allowed by the Weinstatistik Commission is 0.2 gram per 100 cc calculated to potassium sulphate.

SULPHUROUS ACID.

Sulphurous acid is sometimes, although rarely, added as sulphite as a preservative and bleaching agent, and a small amount is almost always introduced in sulphuring the casks before the introduction of the wine. This latter practice is not to be condemned, although the amount of sulphur to be burned in the casks should be limited.

It is now recognized that sulphurous acid exists in wine in two forms—free, and in combination with aldehyde, of which the latter is considered by far the least objectionable. There is considerable difference of opinion concerning the amount of sulphurous acid which should be permitted. The Bavarian Association considers wines too strongly sulphured if 0.008 gram of sulphurous acid is present per 100 cc, while the Swiss Association permits 0.02 gram of total sulphurous acid and 0.002 gram of free sulphurous acid per 100 cc.

ANALYTICAL METHODS.

EXAMINATION OF MUST.

The ordinary determinations to be made in the examination of "must" are specific gravity, extract, reducing sugars, total acids, and tannin. With the exception of the specific gravity, these determinations are made according to the methods described under the examination of wines.

Specific gravity is determined at the temperature of 15.6° by means of the picnometer, small accurately graduated hydrometer, Westphal balance, or Westphal plummet on the analytical balance. The first of these methods is greatly to be preferred on account of accuracy, but the others are much less tedious and for that reason are usually considered to be more practicable.

EXAMINATION OF WINE.

The ordinary determinations to be made in the examination of wine are specific gravity, alcohol, glycerol, extract, ash, total acids, volatile acids, fixed acids, polarization, potassium sulphate, sodium chloride, total sulphurous acid, free sulphurous acid, tannin, and phosphoric acid. The glycerol-alcohol ratio, ash-extract ratio, and "undetermined extract" should also be calculated. It is believed to be much more convenient and satisfactory to state all results in terms of grams per 100 cc than in terms of percentage by weight. The calculation is thus materially simplified, and at the same time the results do not vary greatly from those expressed in terms of percentage by weight.

If it is desirable to determine the purity of a wine of unknown origin, a search should also be made for preservatives and foreign coloring matter.

ESTIMATION OF SPECIFIC GRAVITY.

The specific gravity of wine is determined at the temperature of 15.6° by means of the picnometer, small accurately graduated hydrometer, Westphal balance, or a Westphal plummet on the analytical balance. If either of the last three forms of apparatus is employed, the apparent specific gravity of dry wines may be corrected to 15.6° from Table III. The small amount of extract does not materially influence the index of expansion. By this means the specific gravity may be determined with considerable accuracy at the temperature of 25° to 30°. The error is lessened, however, as the temperature of 15.6° is approached. With sweet wines, however, the temperature should not vary materially from 15.6°.

ESTIMATION OF ALCOHOL.

One hundred cc of the liquid are measured into an Erlenmeyer flask of from 250 to 300 cc capacity, 50 cc of water are added, the flask is attached to a vertical condenser by means of a bent tube, and 100 cc are distilled. Where occasional determinations of alcohol are made, it is found convenient to use an alembic Saleron. This apparatus is made of copper, and can be readily taken apart and placed in a small box. No rubber connections are necessary, so that the setting up only requires a few minutes. The specific gravity of the distillate is determined as given under specific gravity, and the corresponding percentage of alcohol by volume and grams per 100 cc is obtained from Table 1.

ESTIMATION OF GLYCEROL.

One hundred cc of wine are evaporated in a porcelain dish on the water bath to a volume of about 10 cc and the residue is treated with about one gram of quartz sand and with from 1.5 to 2 grams of milk of lime (containing 40 per cent $Ca(OH)_2$) for each gram of extract present, and evaporated almost to dryness. The moist residue is treated with 5 cc of alcohol (96 per cent by volume), the substance adhering to the sides of the dish being removed with a spatula, and the whole mass rubbed to a paste, with the addition of a little more alcohol. The mixture is then heated on the water bath, with constant stirring, to incipient boiling and the liquid decanted into a flask graduated at 100 and 110 cc. The residue is washed repeatedly with 10 cc portions of hot 96 per cent alcohol. The contents of the flask are then cooled to 15°, diluted to the 100 cc mark with 96 per cent alcohol, and filtered through a folded filter. Fifty cc of the filtrate are evaporated to a sirupy consistency in a porcelain dish, on a hot, but not boiling, water

bath, and the residue is transferred to a small glass-stoppered graduated cylinder with 20 cc of absolute alcohol, and three portions of 20 cc each of absolute ether added, with thorough shaking at each interval. Let stand until clear, then pour off through a filter, and wash the cylinder three times or more with a mixture of one part absolute alcohol to one and one-half parts of absolute ether, pouring the wash liquor also through the filter. The filtrate is evaporated to a sirupy consistency, dried for one hour at the temperature of boiling water, and weighed.

The weight of the residue is multiplied by two for the grams of glycerol per 100 cc.

ESTIMATION OF EXTRACT.

In dry wines.—Fifty cc of the sample are evaporated on the water bath to a sirupy consistence in a flat-bottom platinum dish about 85 mm in diameter and capable of holding about 75 cc. The residue is heated for two and a half hours in a drying oven at the temperature of boiling water and weighed. This weight multiplied by 2 gives grams of total residue in 100 cc. The sugar-free extract is found by deducting the weight of sugar in excess of 0.1 gram from the total residue. In the case of plastered wines, the potassium sulphate in excess of 0.1 gram is also deducted.

In sweet wines.—Twenty-five cc of the sample are treated as described under dry wines. When the extract exceeds 6 grams per 100 cc, however, the extract is to be obtained from the specific gravity of the dealcoholized wine, which may be calculated from Table II according to the formula: Specific gravity of dealcoholized wine $= 1 + x - x'$, wherein $x =$ the specific gravity of the wine, and $x' =$ the specific gravity of the alcoholic distillate obtained in the estimation of alcohol.

Illustration.—A sample of Catawba is examined with the result:

Specific gravity of wine (x)	1.0402
Specific gravity of alcoholic distillate (x')	.9857
Difference ($x - x'$)	.0545
Specific gravity dealcoholized wine ($1 + x - x'$)	1.0545
Extract (from Table II)	14.48 grams per 100 cc.

ESTIMATION OF ASH.

The residue from the determination of extract is ignited at low redness, until thoroughly charred, extracted with water, filtered, and washed. The filter paper and insoluble material are returned to the dish and burned to a white ash, when the soluble portion is added and the whole evaporated to dryness after the addition of a few cc of ammonium carbonate, heated to a low redness, cooled in a desiccator, and weighed.

ESTIMATION OF TOTAL ACIDS.

Expel any carbon dioxid that is present by continued shaking. Transfer 25 cc of the sample to a beaker and, in the case of white wines,

add about 10 drops of a neutral litmus solution and titrate with decinormal sodium hydroxid solution. With red wines, add decinormal sodium hydroxid solution until the red color changes to violet. Continue adding a few drops at a time until a drop of the mixture placed on delicate red litmus paper shows an alkaline reaction. The result is expressed in terms of tartaric acid.

Practically identical results may be obtained by diluting 10 cc of wine with about 400 cc of boiling water and titrating with decinormal sodium hydroxid, using phenol phthalein as indicator.

One cc of decinormal sodium hydroxid solution = 0.03 gram tartaric acid per 100 cc (0.075 gram when 10 cc wine are employed).

ESTIMATION OF VOLATILE ACIDS.

Fifty cc of wine, to which a little tannin has been added to prevent foaming, are distilled in a current of steam. The flask is heated until the liquid boils, when the lamp under it is turned down, and the steam passed through until 200 cc have been collected in the receiver. The distillate is titrated with decinormal sodium hydroxid solution, using phenol phthalein as indicator, and the result expressed as acetic acid.

One cc of decinormal sodium hydroxid solution = 0.012 gram acetic acid per 100 cc.

ESTIMATION OF FIXED ACIDS.

The amount of fixed acids is ascertained by subtracting 1.25 times the volatile acids from the total acids.

ESTIMATION OF UNDETERMINED EXTRACT.

The amount of undetermined extract is ascertained by subtracting the sum of the glycerol, ash, and fixed acids from the weight of the sugar-free extract.

ESTIMATION OF SUGAR.

One hundred and sixty cc of wine are transferred to a porcelain dish, exactly neutralized with an approximately normal solution of sodium hydroxid, using litmus paper as an indicator, and evaporated to about one-fourth of the original volume. It is again made up to the volume of 160 cc, 16 cc of basic lead acetate[1] added, shaken and filtered.

To 88 cc of the filtrate are added 8 cc of a saturated solution of sodium sulphate, the flask is well shaken and the contents are filtered. Part of the filtrate is polarized in a 200 mm tube, in a Schmidt and Haensch polariscope, and the reading increased by one-fifth for the polariscope reading.

[1] Prepared by boiling for half an hour 430 grams of normal lead acetate, 130 grams of litharge, and 1,000 cc of water. The mixture is allowed to cool and settle, when the supernatant liquid is diluted to 1.25 specific gravity with recently boiled water.

For reducing sugar, 25 cc of the filtrate are reduced according to Allihn's method for the determination of dextrose. The reagents employed in this method are:

34.639 grams of $CuSO_4.5H_2O$, dissolved in water and diluted to 500 cc.
173 grams of Rochelle salt
125 grams of potassium hydroxid } dissolved in water and diluted to 500 cc.

Place 30 cc of the copper solution, 30 cc of the alkaline tartrate solution, and 60 cc of water in a beaker, and heat to boiling. Add 25 cc of the filtrate mentioned above and boil for two minutes. Filter immediately through a Gooch crucible and wash with hot water. The crucible and precipitate are dried and ignited to bright redness in the absence of reducing gases. The weight of black oxid is multiplied by 0.799 for the weight of copper, and the corresponding amount of reducing sugar (calculated as dextrose) is determined by Table IV. The weight of sugar thus obtained, expressed in grams, multiplied by 4.8 gives grams reducing sugar per 100 cc.

If the filtrate is found to contain more than 1 per cent of reducing sugar (0.571 grams of CuO per 100 cc), more accurate results may be obtained by treating the first determination as approximate, and repeating the determination with such an amount of the filtrate as, diluted to 25 cc, will contain less than 1 per cent of reducing sugar.

ESTIMATION OF SODIUM CHLORID.

Sodium chlorid is obtained by dissolving the ash in water, slightly acidifying with nitric acid, neutralizing with calcium carbonate, and titrating with silver nitrate, using normal potassium chromate as indicator.

ESTIMATION OF POTASSIUM SULPHATE.

The sulphuric acid is precipitated directly, in 50 cc of wine, by means of barium chlorid, and the resulting barium sulphate determined by the ordinary method. The result is expressed in grams of potassium sulphate per 100 cc. In all cases this determination should be made in the original wine, as results obtained with the ash are always low.

ESTIMATION OF SULPHUROUS ACID.

One hundred cc of the wine are distilled in a current of carbon dioxid, after the addition of 5 cc of a 20 per cent solution of glacial phosphoric acid, until 50 cc have passed over. The distillate is collected in a decinormal iodin solution in a flask closed with a stopper perforated with two holes, through one of which the end of the condenser passes and through the other a U-tube containing a portion of the standardized iodin solution. Twenty-five cc of $^{n}/_{10}$ iodin solution may be employed, diluted with water to give the desired volume.

When the distillation is finished the contents of the U-tube are washed into the flask and the excess of iodin determined with standardized thiosulphate solution. On account of its lack of permanence, the iodin solution employed should be titrated from time to time with a decinormal thiosulphate solution (containing 24.8 grams $Na_2S_2O_3.5\ H_2O$ per liter). The number of cubic centimeters of decinormal iodin solution employed, less the number of cubic centimeters of thiosulphate solution required at the end of the determination, is multiplied by 0.0032 for the grams of sulphur dioxid per 100 cc of wine.

Fairly accurate results may also be obtained by the following method:

Twenty-five cc of a solution of potassium hydroxid (56 grams per liter) are placed in a flask having a capacity of approximately 200 cc. Fifty cc of the wine are introduced by means of a pipette and mixed with the potassium hydroxid. The mixture is allowed to stand for fifteen minutes, with occasional agitation. Ten cc of 1–3 sulphuric acid are added, also a few cubic centimeters of starch solution; the mixture is then titrated with $^{n}/_{50}$ iodin solution. The iodin solution is introduced as rapidly as possible and the addition continued until the blue color will last for several minutes. The number of cubic centimeters of the iodin solution employed, multiplied by 0.00128, gives the weight of the total sulphurous acid expressed in grams per 100 cc.

ESTIMATION OF FREE SULPHUROUS ACID.

Fifty cc of the wine are treated, in a flask having a capacity of approximately 200 cc, with 5 cc of 1–3 sulphuric acid, a small piece of sodium carbonate added to expel the air, and the sulphurous acid titrated with $^{n}/_{50}$ iodin solution as directed under total sulphurous acid.

The number of cubic centimeters of iodin solution employed, multiplied by 0.00128, gives the weight of the free sulphurous acid expressed in grams per 100 cc.

DETECTION OF PRESERVATIVES.

The preservatives commonly tested for in wines are salicylic acid, benzoic acid, saccharin, abrastol, hydronaphthol, boric acid, borofluorides, and silicofluorides. Of these the salicylic and benzoic acids are both somewhat commonly employed. Abrastol is said to be used to some extent in Europe, but has not yet been reported in American wines. Hydronaphthol has been used in rare instances, and is still used with sufficient frequency to warrant more consideration than it usually receives from food laboratories. Boric acid is better known as a preservative for milk and meat preparations than for fruits and fruit preparations. It is sometimes used, however, in both wine and beer. Its detection is a somewhat more delicate matter

than is the case with the other preservatives, because a small amount of boric acid is normal to wines. It is sometimes a difficult matter to fix the amount which may naturally occur. In order to make this test of practical value, therefore, it is essential that the determination of boric acid should be quantitative. The alkaline fluorides, as well as the alkaline borofluorides and silicofluorides, are coming into somewhat more general use now as food preservatives, although they have not been frequently reported in wines.

DETECTION OF SALICYLIC ACID.

About 75 cc of the sample are acidified with 5 cc of dilute (1–3) sulphuric acid, and extracted in a separatory funnel with ether or chloroform. If the former solvent be employed the ether is transferred to a porcelain dish and allowed to evaporate spontaneously, and the residue is digested for a short time with a few cubic centimeters of gasoline, which has a boiling point below 60°. The gasoline is then transferred to another evaporating dish, and allowed to evaporate spontaneously. The residue is dissolved in 1 to 2 cc of water and tested with a 0.5 per cent solution of ferric chlorid. The presence of salicylic acid is indicated by the formation of a marked violet color, which is soluble in water. In case of any turbidity which masks the color, filtration may be resorted to and the color of the filtrate noted. When chloroform is used as the solvent the test may be made directly in the chloroform solution with ferric chlorid.

DETECTION OF BENZOIC ACID.

The methods given below are equally applicable to benzoic acid and saccharin, and are only characteristic in the absence of the latter. The methods given under saccharin, however, are not applicable to benzoic acid. In case the two substances occur together, advantage is taken of the fact that benzoic acid is volatile with steam while saccharin is not. In this case about 200 cc of the sample are acidified with 5 cc of a 20 per cent solution of glacial phosphoric acid and distilled almost to dryness. The distillate is made slightly alkaline, evaporated to dryness, and the residue treated according to any of the methods given below for the detection of benzoic acid. The benzoic acid can only be completely volatilized, however, by leading a considerable quantity of steam through the distilling flask.

Mohler's method.—About 200 cc of the sample are made alkaline with a solution of barium hydroxid, evaporated to about one-third of its former volume, and filtered through a folded filter. The filtrate is acidified with sulphuric acid and extracted with ether several times. The ether is transferred to a porcelain dish, allowed to evaporate spontaneously, and the residue tested for benzoic acid by Mohler's method. The details of this method are as follows: The residue is treated with

2 to 3 cc of strong sulphuric acid and heated until white fumes appear. By this means benzoic acid is converted into sulphobenzoic acid. A few crystals of potassium nitrate are added and the heating continued until the solution is almost or quite colorless. This causes the formation of metadinitrobenzoic acid. When cool the acid is poured into water and ammonia added in excess, followed by a drop or two of ammonium sulphid. The nitro compound becomes converted into ammonium metadiamidobenzoate, which possesses a peculiar reddish-brown color. This reaction takes place immediately and is seen at the surface of the liquid without stirring. Salicylic acid will sometimes give the same reaction, but only after waiting some minutes. The benzoic acid must first be separated in a state of approximate purity before this test can be applied. Half a milligram of the acid can be detected in the absence of interfering bodies. This reaction is also given by saccharin.

Peter's method.[1]—For this method the wine is extracted by shaking with chloroform in a separatory funnel after acidifying with 5 cc of 1–3 sulphuric acid. The chloroform is allowed to evaporate to dryness in a small porcelain dish. When benzoic acid is present in considerable quantities the crystalline character of the residue frequently indicates its presence. The dish containing the residue is placed in a vessel of ice water, a few cubic centimeters of strong sulphuric acid are added, and the contents are then stirred until the residue is dissolved. Barium peroxid is then gradually dusted into the dish, with continual stirring, until the liquid begins to foam, after which a few cubic centimeters of commercial hydrogen peroxid are added drop by drop. The dish is then taken from the water, and its contents are diluted with water to convenient bulk, the barium sulphate is removed by filtration, and the filtrate, which should still be acid, shaken with chloroform. The chloroform extract is then tested for salicylic acid as directed in the method for the detection of salicylic acid. Dr. Peter also suggests that persulphate of ammonium affects this oxidization.

The presence of benzoic acid may be confirmed by neutralizing the aqueous solution of the extracted benzoic acid with sodium hydroxid, evaporating to a very small volume, and acidifying with sulphuric acid, when the presence of a large amount of benzoic acid is indicated by the formation of a white flocculent precipitate. The concentrated solution of the sodium salt may be further tested by making it exactly neutral and adding a drop of a dilute ferric chlorid solution, when ferric benzoate is precipitated in the presence of a large amount of benzoic acid. The appearance of ferric benzoate is markedly different from that of ferric hydroxid, in that it is almost white when viewed by transmitted light, whereas ferric hydroxid has a brown color under the same conditions.

[1] Unpublished. Inserted here by courtesy of the author, Dr. A. M. Peter.

A portion of the residue extracted by chloroform, supposed to contain benzoic acid, may also be treated with dilute sodium hydroxid and sodium amalgam, when the presence of benzoic acid will be detected by the smell of bitter almond oil.

DETECTION OF SACCHARIN.

About 50 cc of the sample are acidified with 5 cc of a 1–3 solution of sulphuric acid and extracted in a separatory funnel with a mixture of equal parts of gasoline which distills below 60° and sulphuric ether. On allowing the solvent to evaporate in a porcelain dish the presence of saccharin in the residue may be detected by the taste. About 2 cc of a saturated solution of sodium hydroxid are then added and the dish heated till the water evaporates, and the sodium hydroxid fuses quietly for from twenty to thirty minutes.[1] The saccharin is now converted into salicylic acid. If the temperature is held at approximately 250° during the fusion, the reaction is quantitative. The fused mass is then allowed to cool, dissolved in about 50 cc of water acidified with sulphuric acid, and tested for salicylic acid as directed on page 59. This method presupposes that the wine contains no salicylic acid. If that substance be also present, saccharin may be separated by Gair's[2] method. The residue left by the evaporation of ether is dissolved in 50 cc of dilute hydrochloric acid, sufficient bromin water added to impart a marked color to the liquid, the whole thoroughly shaken and filtered. The salicylic acid is completely precipitated as bromo-salicylic acid, while the filtrate may be made strongly alkaline with sodium hydroxid, evaporated to dryness and tested for saccharin as described above.

DETECTION OF ABRASTOL.

Fifty cc of the sample are made alkaline with a few drops of ammonia, gently shaken for two minutes with 10 cc of amyl alcohol (ethyl alcohol is added if an emulsion be formed). The amyl alcohol is decanted, filtered if turbid, and evaporated to dryness. The residue is thoroughly moistened with 2 cc of a mixture of equal parts of strong nitric acid and water, heated on the water bath until half of the water is evaporated, and transferred to a test tube with the addition of 1 cc of water. About 0.2 gram of ferrous sulphate is now added, and then an excess of ammonia, drop by drop, with constant shaking. If the resulting precipitate be of a reddish color, it is dissolved in a few drops of sulphuric acid, and ferrous sulphate and ammonia are added as before. As soon as a dark-colored or greenish precipitate has been obtained, 5 cc of alcohol are added, the precipitate is dissolved in sulphuric acid, and the fluid is well shaken and filtered. In the absence

[1] Schmidt's method. [2] Rev. intern. des fals., 1893.

of abrastol this method gives a colorless or light-yellow liquid, while a red color is produced in the presence of 0.01 gram of abrastol.[1]

DETECTION OF HYDRONAPHTHOL.

About 100 cc are acidified with sulphuric acid and subjected to distillation. The first 25 cc of the distillate are made very faintly alkaline with dilute ammonia and then very slightly acid with dilute nitric acid. A drop of a concentrated solution of sodium nitrite is then added. In the presence of hydronaphthol a rose color is developed. The test is a delicate one and is quite characteristic, but requires exact conditions to be successfully performed.[2]

ESTIMATION OF BORIC ACID.

Boric acid is a normal constituent of wine and its qualitative detection in wine is therefore of little value. The following method[3] is found to give satisfactory results in the absence of iron:

One hundred cc of the sample under examination are evaporated to dryness, after being made alkaline with a solution of barium hydroxid, and the residue is ignited until a white ash is secured. The ash is dissolved in dilute hydrochloric acid, with the aid of heat if necessary, sodium hydroxid is added, the mixture heated to boiling, and the resulting precipitate separated by filtration and washed with hot water. Throughout the determination care is taken to keep the volume of liquid as low as possible. The filtrate is then acidified with sulphuric acid and brought to the boiling point, to completely expel the carbon dioxide. About two volumes of glycerol are then added and the solution exactly neutralized with sodium hydroxid, using methyl orange as indicator. The boric acid is now in the free state and may be titrated directly. Phenol phthalein is then introduced, and decinormal sodium hydroxid again added till the liquid becomes red.

The number of cubic centimeters of decinormal sodium hydroxid required to neutralize the solution to phenol phthalein multiplied by 0.0062 gives the grams of H_3BO_3 per 100 cc of the wine.

The following method, if carefully followed, gives approximate results, and may be used in a preliminary examination:

A series of solutions of boric acid in dilute hydrochloric acid (about 1 part concentrated acid to 15 parts water), ranging from 1 to 20 milligrams per 100 cc, is prepared. A drop of each solution is placed on a piece of turmeric paper 2 cm square, the paper dried, and the color noted. The pipettes, or pieces of glass tubing used for dropping the solutions, should have apertures of uniform size, in order that as nearly as possible the same amount of solution may be used in each

[1] Bellier, Mon. Sci. [4], *9*, 191.

[2] Beebe, Analyst, 1888, *13*, 52.

[3] R. T. Thomson, Jour. Soc. Chem. Ind., *12*, 432.

case. The analyst should then select the tint which to his eye seems to be most characteristic.

In this laboratory the lightest shade of pink, spreading over the entire surface of the turmeric paper, has been chosen as the standard, and is used for comparison. For the determination, 50 cc of the sample under examination are made slightly alkaline with limewater, evaporated to dryness, and ignited. Three cc of water are then added to the ash and half-strength hydrochloric acid, drop by drop, until an acid reaction is obtained. The volume of acid so added is noted and enough dilute hydrochloric acid (1 part of the concentrated acid to 5 parts of water) is then added to make the total volume of the liquid 5 cc, the whole thoroughly mixed, and a drop tested with turmeric paper. If the boric-acid reaction is heavier than that adopted as the standard, the solution should be diluted with dilute hydrochloric acid (1–15) until the reaction approximates the shade of the standard. From the dilution the approximate percentage of boric acid in the original sample may be calculated.

DETECTION OF FLUORID.

First method.—About 100 grams of the sample, made slightly alkaline with ammonium carbonate, are heated to boiling and the fluorin precipitated with a few cubic centimeters of calcium chlorid solution. The boiling is continued for five minutes after the precipitation, the precipitate removed by filtration, washed with a little water, dried, and ignited in a small platinum crucible. One cc of strong sulphuric acid is added, the crucible is covered with a watch glass coated with paraffin or wax, with a character marked through the wax so as to permit the watch glass to be etched at some point, and heated on a water bath for an hour at a temperature of from 75° to 80°. One mg. can be readily detected by this method.

Second method.—If it is desired, the preceding method may be varied by mixing a small amount of precipitated silica with the precipitated calcium fluorid and placing it in a crucible covered by a watch glass which is not coated with paraffin, and to which a drop of water is suspended on the underside. One cc of concentrated sulphuric acid is added to the crucible, which is then heated for an hour at the temperature of 70° or 80°. The silicon fluorid which is formed is decomposed by the water, leaving a gelatinous deposit of silica, while a ring is frequently etched at the circumference of the drop of water.

DETECTION OF BOROFLUORIDS AND SILICOFLUORIDS.

About 200 cc of wine are made alkaline with limewater, evaporated to dryness, and incinerated. The crude ash first obtained is extracted with water, to which sufficient acetic acid has been added to decom-

pose carbonates, filtered, and the insoluble portion again burned, extracted with dilute acetic acid, and again filtered. The insoluble portion now contains calcium silicate and fluorid, while the filtrate will contain as a calcium salt all the boric acid present.

First method.[1]—The filter containing the insoluble portion is again incinerated, mixed with a little precipitated silica, and placed, with the addition of 1 or 2 cc of concentrated sulphuric acid, in a short test tube, which is attached to a small U-tube, containing a few drops of water. The test tube is now placed in a beaker of water, which is kept hot on the steam bath for a few minutes. If any fluorid be present the silicon fluorid generated will be decomposed by the water in the U-tube and will form a gelatinous deposit on the walls of the tube.

The filtrate is now tested as directed under boric acid. If both hydrochloric and boric acids be present, it is evident that they were combined as borofluorid. If, however, silicon fluorid be detected and not boric acid, the operation is repeated without the introduction of the silica, in which case the formation of the silicon skeleton is conclusive of the presence of silicofluorid.

Second method.—The filter containing the insoluble portion is again incinerated in a platinum crucible, mixed with a little precipitated silica, and 1 cc of concentrated sulphuric acid added. The crucible is covered with a watch glass to whose underside a drop of water is suspended, and heated an hour at the temperature of 70° or 80°. The silicon fluorid which is formed is decomposed by the water, leaving a gelatinous deposit of silica.

TABLES USED IN EXAMINATION OF WINES.

The following tables are for use in the analysis of wines. For convenience of reference the tables are numbered:

[1] Nevière and Hubert, Mon. sci., 1895 [4], *9*, 324.

TABLE I.—*Percentage of alcohol.*

[Recalculated from the determinations of Gilpin, Drinkwater, and Squibb.]

Specific gravity at 60° F.	Alcohol.		Specific gravity at 60° F.	Alcohol.		Specific gravity at 60° F.	Alcohol.		Specific gravity at 60° F.	Alcohol.	
	Per cent by volume.	Grams per 100 cc.		Per cent by volume.	Grams per 100 cc.		Per cent by volume.	Grams per 100 cc.		Per cent by volume.	Grams per 100 cc.
1.00000	**0.00**	**0.00**	**.99629**	**2.50**	**1.98**	**.99281**	**5.00**	**3.97**	**.98959**	**7.50**	**5.96**
0.99992	.05	.04	.99622	2.55	2.02	.99274	5.05	4.01	.98953	7.55	6.00
.99984	.10	.08	.99615	2.60	2.06	.99268	5.10	4.05	.98947	7.60	6.04
.99976	.15	.12	.99607	2.65	2.10	.99261	5.15	4.09	.98940	7.65	6.07
.99968	.20	.16	.99600	2.70	2.14	.99255	5.20	4.13	.98934	7.70	6.11
.99961	.25	.20	.99593	2.75	2.18	.99248	5.25	4.17	.98928	7.75	6.15
.99953	.30	.24	.99586	2.80	2.22	.99241	5.30	4.21	.98922	7.80	6.19
.99945	.35	.28	.99579	2.85	2.26	.99235	5.35	4.25	.98916	7.85	6.23
.99937	.40	.32	.99571	2.90	2.30	.99228	5.40	4.29	.98909	7.90	6.27
.99930	.45	.36	.99564	2.95	2.34	.99222	5.45	4.33	.98903	7.95	6.31
.99923	**0.50**	**0.40**	**.99557**	**3.00**	**2.38**	**.99215**	**5.50**	**4.37**	**.98897**	**8.00**	**6.35**
.99915	.55	.44	.99550	3.05	2.42	.99208	5.55	4.40	.98891	8.05	6.39
.99907	.60	.48	.99543	3.10	2.46	.99202	5.60	4.44	.98885	8.10	6.43
.99900	.65	.52	.99536	3.15	2.50	.99195	5.65	4.48	.98879	8.15	6.47
.99892	.70	.56	.99529	3.20	2.54	.99189	5.70	4.52	.98873	8.20	6.51
.99884	.75	.60	.99522	3.25	2.58	.99182	5.75	4.56	.98867	8.25	6.55
.99877	.80	.64	.99515	3.30	2.62	.99175	5.80	4.60	.98861	8.30	6.59
.99869	.85	.67	.99508	3.35	2.66	.99169	5.85	4.64	.98855	8.35	6.63
.99861	.90	.71	.99501	3.40	2.70	.99162	5.90	4.68	.98849	8.40	6.67
.99854	.95	.75	.99494	3.45	2.74	.99156	5.95	4.72	.98843	8.45	6.71
.99849	**1.00**	**0.79**	**.99487**	**3.50**	**2.78**	**.99149**	**6.00**	**4.76**	**.98837**	**8.50**	**6.75**
.99842	1.05	.83	.99480	3.55	2.82	.99143	6.05	4.80	.98831	8.55	6.79
.99834	1.10	.87	.99473	3.60	2.86	.99136	6.10	4.84	.98825	8.60	6.83
.99827	1.15	.91	.99466	3.65	2.90	.99130	6.15	4.88	.98819	8.65	6.87
.99819	1.20	.95	.99459	3.70	2.94	.99123	6.20	4.92	.98813	8.70	6.91
.99812	1.25	.99	.99452	3.75	2.98	.99117	6.25	4.96	.98807	8.75	6.95
.99805	1.30	1.03	.99445	3.80	3.02	.99111	6.30	5.00	.98801	8.80	6.99
.99797	1.35	1.07	.99438	3.85	3.06	.99104	6.35	5.04	.98795	8.85	7.03
.99790	1.40	1.11	.99431	3.90	3.10	.99098	6.40	5.08	.98789	8.90	7.07
.99782	1.45	1.15	.99424	3.95	3.14	.99091	6.45	5.12	.98783	8.95	7.11
.99775	**1.50**	**1.19**	**.99417**	**4.00**	**3.18**	**.99085**	**6.50**	**5.16**	**.98777**	**9.00**	**7.14**
.99768	1.55	1.23	.99410	4.05	3.22	.99079	6.55	5.20	.98771	9.05	7.18
.99760	1.60	1.27	.99403	4.10	3.26	.99072	6.60	5.24	.98765	9.10	7.22
.99753	1.65	1.31	.99397	4.15	3.30	.99066	6.65	5.28	.98759	9.15	7.26
.99745	1.70	1.35	.99390	4.20	3.34	.99059	6.70	5.32	.98754	9.20	7.30
.99738	1.75	1.39	.99383	4.25	3.38	.99053	6.75	5.36	.98748	9.25	7.34
.99731	1.80	1.43	.99376	4.30	3.42	.99047	6.80	5.40	.98742	9.30	7.38
.99723	1.85	1.47	.99369	4.35	3.46	.99040	6.85	5.44	.98736	9.35	7.42
.99716	1.90	1.51	.99363	4.40	3.50	.99034	6.90	5.48	.98730	9.40	7.46
.99708	1.95	1.55	.99356	4.45	3.54	.99027	6.95	5.52	.98724	9.45	7.50
.99701	**2.00**	**1.59**	**.99349**	**4.50**	**3.58**	**.99021**	**7.00**	**5.56**	**.98719**	**9.50**	**7.54**
.99694	2.05	1.62	.59342	4.55	3.62	.99015	7.05	5.60	.98713	9.55	7.58
.99687	2.10	1.66	.99935	4.60	3.66	.99009	7.10	5.64	.98707	9.60	7.62
.99679	2.15	1.70	.99329	4.65	3.70	.99002	7.15	5.68	.98701	9.65	7.66
.99672	2.20	1.74	.99322	4.70	3.74	.98996	7.20	5.72	.98695	9.70	7.70
.99665	2.25	1.78	.99315	4.75	3.77	.98990	7.25	5.76	.98689	9.75	7.74
.99658	2.30	1.82	.99308	4.80	3.81	.98984	7.30	5.80	.98683	9.80	7.78
.99651	2.35	1.86	.99301	4.85	3.85	.98978	7.35	5.84	.98678	9.85	7.82
.99643	2.40	1.90	.99295	4.90	3.98	.98971	7.40	5.88	.98672	9.90	7.85
.99636	2.45	1.94	.99288	4.95	3.93	.98965	7.45	5.92	.98666	9.95	7.89

TABLE I.—*Percentage of alcohol*—Continued.

[Recalculated from the determinations of Gilpin, Drinkwater, and Squibb.]

Specific gravity at 60° F.	Alcohol.		Specific gravity at 60° F.	Alcohol.		Specific gravity at 60° F.	Alcohol.		Specific gravity at 60° F.	Alcohol.	
	Per cent by volume.	Grams per 100 cc.		Per cent by volume.	Grams per 100 cc.		Per cent by volume.	Grams per 100 cc.		Per cent by volume.	Grams per 100 cc.
.98660	**10.00**	**7.93**	**.98381**	**12.50**	**9.92**	**.98114**	**15.00**	**11.90**	**.97859**	**17.50**	**13.89**
.98654	10.05	7.97	.98375	12.55	9.96	.98108	15.05	11.94	.97853	17.55	13.92
.98649	10.10	8.01	.98370	12.60	10.00	.98104	15.10	11.98	.97848	17.60	13.96
.98643	10.15	8.05	.98364	12.65	10.03	.98099	15.15	12.02	.97843	17.65	14.00
.98637	10.20	8.09	.98359	12.70	10.07	.98093	15.20	12.06	.97838	17.70	14.04
.98632	10.25	8.13	.98353	12.75	10.11	.98088	15.25	12.10	.97833	17.75	14.08
.98626	10.30	8.17	.98348	12.80	10.15	.98083	15.30	12.14	.97828	17.80	14.12
.98620	10.35	8.21	.98342	12.85	10.19	.98078	15.35	12.18	.97823	17.85	14.16
.98614	10.40	8.25	.98337	12.90	10.23	.98073	15.40	12.22	.97818	17.90	14.20
.98609	10.45	8.29	.98331	12.95	10.27	.98068	15.45	12.26	.97813	17.95	14.24
.98603	**10.50**	**8.33**	**.98326**	**13.00**	**10.31**	**.98063**	**15.50**	**12.30**	**.97808**	**18.00**	**14.28**
.98597	10.55	8.37	.98321	13.05	10.35	.98057	15.55	12.34	.97803	18.05	14.32
.98592	10.60	8.41	.98315	13.10	10.39	.98052	15.60	12.37	.97798	18.10	14.36
.98586	10.65	8.45	.98310	13.15	10.43	.98047	15.65	12.41	.97793	18.15	14.40
.98580	10.70	8.49	.98305	13.20	10.47	.98042	15.70	12.45	.97788	18.20	14.44
.98575	10.75	8.53	.98299	13.25	10.51	.98037	15.75	12.49	.97783	18.25	14.48
.98569	10.80	8.57	.98294	13.30	10.55	.98032	15.80	12.53	.97778	18.30	14.52
.98563	10.85	8.61	.98289	13.35	10.59	.98026	15.85	12.57	.97773	18.35	14.56
.98557	10.90	8.65	.98283	13.40	10.63	.98021	15.90	12.61	.97768	18.40	14.60
.98552	10.95	8.69	.98278	13.45	10.67	.98016	15.95	12.65	.97763	18.45	14.64
.98546	**11.00**	**8.73**	**.98273**	**13.50**	**10.71**	**.98011**	**16.00**	**12.69**	**.97758**	**18.50**	**14.68**
.98540	11.05	8.77	.98267	13.55	10.75	.98005	16.05	12.73	.97753	18.55	14.72
.98535	11.10	8.81	.98262	13.60	10.79	.98001	16.10	12.77	.97748	18.60	14.76
.98529	11.15	8.85	.98256	13.65	10.83	.97996	16.15	12.81	.97743	18.65	14.80
.98524	11.20	8.89	.98251	13.70	10.87	.97991	16.20	12.85	.97738	18.70	14.84
.98518	11.25	8.93	.98246	13.75	10.91	.97986	16.25	12.89	.97733	18.75	14.88
.98513	11.30	8.97	.98240	13.80	10.95	.97980	16.30	12.93	.97728	18.80	14.92
.98507	11.35	9.01	.98235	13.85	10.99	.97975	16.35	12.97	.97723	18.85	14.96
.98502	11.40	9.05	.98230	13.90	11.03	.97970	16.40	13.01	.97718	18.90	15.00
.98496	11.45	9.09	.98224	13.95	11.07	.97965	16.45	13.05	.97713	18.95	15.04
.98491	**11.50**	**9.13**	**.98219**	**14.00**	**11.11**	**.97960**	**16.50**	**13.09**	**.97708**	**19.00**	**15.08**
.98485	11.55	9.17	.98214	14.05	11.15	.97955	16.55	13.13	.97703	19.05	15.11
.98479	11.60	9.21	.98209	14.10	11.19	.97950	16.60	13.17	.97698	19.10	15.15
.98474	11.65	9.25	.98203	14.15	11.23	.97945	16.65	13.21	.97693	19.15	15.19
.98468	11.70	9.29	.98198	14.20	11.27	.97940	16.70	13.25	.97688	19.20	15.23
.98463	11.75	9.32	.98193	14.25	11.31	.97935	16.75	13.29	.97683	19.25	15.27
.98457	11.80	9.36	.98188	14.30	11.35	.97929	16.80	13.33	.97678	19.30	15.31
.98452	11.85	9.40	.98182	14.35	11.39	.97924	16.85	13.37	.97673	19.35	15.35
.98446	11.90	9.44	.98177	14.40	11.43	.97919	16.90	13.41	.97668	19.40	15.39
.98441	11.95	9.48	.98172	14.45	11.47	.97914	16.95	13.45	.97663	19.45	15.43
.98435	**12.00**	**9.52**	**.98167**	**14.50**	**11.51**	**.97909**	**17.00**	**13.49**	**.97658**	**19.50**	**15.47**
.98430	12.05	9.56	.98161	14.55	11.55	.97904	17.05	13.53	.97653	19.55	15.51
.98424	12.10	9.60	.98156	14.60	11.59	.97899	17.10	13.57	.97648	19.60	15.55
.98419	12.15	9.64	.98151	14.65	11.63	.97894	17.15	13.61	.97643	19.65	15.59
.98413	12.20	9.68	.98146	14.70	11.67	.97889	17.20	13.65	.97638	19.70	15.63
.98408	12.25	9.72	.98140	14.75	11.71	.97884	17.25	13.69	.97633	19.75	15.67
.98402	12.30	9.76	.98135	14.80	11.75	.97879	17.30	13.73	.97628	19.80	15.71
.98397	12.35	9.80	.98130	14.85	11.79	.97874	17.35	13.77	.97623	19.85	15.75
.98391	12.40	9.84	.98125	14.90	11.82	.97869	17.40	13.81	.97618	19.90	15.79
.98386	12.45	9.88	.98119	14.95	11.86	.97864	17.45	13.85	.97613	19.95	15.83

TABLE I.—*Percentage of alcohol*—Continued.

[Recalculated from the determinations of Gilpin, Drinkwater, and Squibb.]

Specific gravity at 60° F.	Alcohol.		Specific gravity at 60° F.	Alcohol.		Specific gravity at 60° F.	Alcohol.		Specific gravity at 60° F.	Alcohol.	
	Per cent by volume.	Grams per 100 cc.		Per cent by volume.	Grams per 100 cc.		Per cent by volume.	Grams per 100 cc.		Per cent by volume.	Grams per 100 cc.
.97608	**20.00**	**15.87**	**.97355**	**22.50**	**17.86**	**.97097**	**25.00**	**19.84**	**.96828**	**27.50**	**21.83**
.97603	20.05	15.91	.97350	22.55	17.90	.97092	25.05	19.88	.96822	27.55	21.86
.97598	20.10	15.95	.97345	22.60	17.94	.97086	25.10	19.92	.96816	27.60	21.90
.97593	20.15	15.99	.97340	22.65	17.98	.97081	25.15	19.96	.96811	27.65	21.94
.97588	20.20	16.03	.97335	22.70	18.02	.97076	25.20	20.00	.96805	27.70	21.98
.97583	20.25	16.06	.97330	22.75	18.06	.97071	25.25	20.04	.96800	27.75	22.02
.97578	20.30	16.10	.97324	22.80	18.10	.97065	25.30	20.08	.96794	27.80	22.06
.97573	20.35	16.14	.97319	22.85	18.14	.97060	25.35	20.12	.96789	27.85	22.10
.97568	20.40	16.18	.97314	22.90	18.18	.97055	25.40	20.16	.96783	27.90	22.14
.97563	20.45	16.22	.97309	22.95	18.22	.97049	25.45	20.20	.96778	27.95	22.18
.97558	**20.50**	**16.26**	**.97304**	**23.00**	**18.26**	**.97044**	**25.50**	**20.24**	**.96772**	**28.00**	**22.22**
.97552	20.55	16.30	.97299	23.05	18.29	.97039	25.55	20.28	.96766	28.05	22.26
.97547	20.60	16.34	.97294	23.10	18.33	.97033	25.60	20.32	.96761	28.10	22.30
.97542	20.65	16.38	.97289	23.15	18.37	.97028	25.65	20.36	.96755	28.15	22.34
.97537	20.70	16.42	.97283	23.20	18.41	.97023	25.70	20.40	.96749	28.20	22.38
.97532	20.75	16.46	.97278	23.25	18.45	.97018	25.75	20.44	.96744	28.25	22.42
.97527	20.80	16.50	.97273	23.30	18.49	.97012	25.80	20.47	.96738	28.30	22.45
.97522	20.85	16.54	.97268	23.35	18.53	.97007	25.85	20.51	.96732	28.35	22.49
.97517	20.90	16.58	.97263	23.40	18.57	.97001	25.90	20.55	.96726	28.40	22.53
.97512	20.95	16.62	.97258	23.45	18.61	.96996	25.95	20.59	.96721	28.45	22.57
.97507	**21.00**	**16.66**	**.97253**	**23.50**	**18.65**	**.96991**	**26.00**	**20.63**	**.96715**	**28.50**	**22.61**
.97502	21.05	16.70	.97247	23.55	18.69	.96986	26.05	20.67	.96709	28.55	22.65
.97497	21.10	16.74	.97242	23.60	18.73	.96980	26.10	20.71	.96704	28.60	22.69
.97492	21.15	16.78	.97237	23.65	18.77	.96975	26.15	20.75	.96698	28.65	22.73
.97487	21.20	16.82	.97232	23.70	18.81	.96969	26.20	20.79	.96692	28.70	22.77
.97482	21.25	16.86	.97227	23.75	18.84	.96964	26.25	20.83	.96687	28.75	22.81
.97477	21.30	16.90	.97222	23.80	18.88	.96959	26.30	20.87	.96681	28.80	22.85
.97472	21.35	16.94	.97216	23.85	18.92	.96953	26.35	20.91	.96675	28.85	22.89
.97467	21.40	16.98	.97211	23.90	18.96	.96949	26.40	20.95	.96669	28.90	22.93
.97462	21.45	17.02	.97206	23.95	19.00	.96942	26.45	20.99	.96664	28.95	22.97
.97457	**21.50**	**17.06**	**.97201**	**24.00**	**19.04**	**.96937**	**26.50**	**21.03**	**.96658**	**29.00**	**23.01**
.97451	21.55	17.10	.97196	24.05	19.08	.96932	26.55	21.07	.96652	29.05	23.05
.97446	21.60	17.14	.97191	24.10	19.12	.96926	26.60	21.11	.96646	29.10	23.09
.97441	21.65	17.18	.97185	24.15	19.16	.96921	26.65	21.15	.96640	29.15	23.13
.97436	21.70	17.22	.97180	24.20	19.20	.96915	26.70	21.19	.96635	29.20	23.17
.97431	21.75	17.26	.97175	24.25	19.24	.96910	26.75	21.23	.96629	29.25	23.21
.97426	21.80	17.30	.97170	24.30	19.28	.96905	26.80	21.27	.96623	29.30	23.25
.97421	21.85	17.34	.97165	24.35	19.32	.96899	26.85	21.31	.96617	29.35	23.29
.97416	21.90	17.38	.97159	24.40	19.36	.96894	26.90	21.35	.96611	29.40	23.33
.97411	21.95	17.42	.97154	24.45	19.40	.96888	26.95	21.39	.96605	29.45	23.37
.97406	**22.00**	**17.46**	**.97149**	**24.50**	**19.44**	**.96883**	**27.00**	**21.43**	**.96600**	**29.50**	**23.41**
.97401	22.05	17.50	.97144	24.55	19.48	.96877	27.05	21.47	.96594	29.55	23.45
.97396	22.10	17.54	.97139	24.60	19.52	.96872	27.10	21.51	.96587	29.60	23.49
.97391	22.15	17.58	.97133	24.65	19.56	.96866	27.15	21.55	.96582	29.65	23.53
.97386	22.20	17.62	.97128	24.70	19.60	.96861	27.20	21.59	.96576	29.70	23.57
.97381	22.25	17.66	.97123	24.75	19.64	.96855	27.25	21.63	.96570	29.75	23.61
.97375	22.30	17.70	.97118	24.80	19.68	.96850	27.30	21.67	.96564	29.80	23.65
.97370	22.35	17.74	.97113	24.85	19.72	.96844	27.35	21.71	.96559	29.85	23.69
.97365	22.40	17.78	.97107	24.90	19.76	.96839	27.40	21.75	.96553	29.90	23.73
.97360	22.45	17.82	.97102	24.95	19.80	.96833	27.45	21.79	.96547	29.95	23.77

TABLE I.—*Percentage of alcohol*—Continued.

[Recalculated from the determinations of Gilpin, Drinkwater, and Squibb.]

Specific gravity at 60° F.	Alcohol.		Specific gravity at 60° F.	Alcohol.		Specific gravity at 60° F.	Alcohol.		Specific gravity at 60° F.	Alcohol.	
	Per cent by volume.	Grams per 100 cc.		Per cent by volume.	Grams per 100 cc.		Per cent by volume.	Grams per 100 cc.		Per cent by volume.	Grams per 100 cc.
.96541	**30.00**	**23.81**	**.96235**	**32.50**	**25.79**	**.95910**	**35.00**	**27.78**	**.95560**	**37.50**	**29.76**
.96535	30.05	23.85	.96229	32.55	25.83	.95903	35.05	27.82	.95552	37.55	29.80
.96529	30.10	23.89	.96222	32.60	25.87	.95896	35.10	27.86	.95545	37.60	29.84
.96523	30.15	23.93	.96216	32.65	25.91	.95889	35.15	27.90	.95538	37.65	29.88
.96517	30.20	23.97	.96210	32.70	25.95	.95883	35.20	27.94	.95531	37.70	29.92
.96511	30.25	24.01	.96204	32.75	25.99	.95876	35.25	27.98	.95523	37.75	29.96
.96505	30.30	24.04	.96197	32.80	26.03	.95869	35.30	28.02	.95516	37.80	30.00
.96499	30.35	24.08	.96191	32.85	26.07	.95862	35.35	28.05	.95509	37.85	30.04
.96493	30.40	24.12	.96185	32.90	26.11	.95855	35.40	28.09	.95502	37.90	30.08
.96487	30.45	24.16	.96178	32.95	26.15	.95848	35.45	28.13	.95494	37.95	30.12
.96181	**30.50**	**24.20**	**.96172**	**33.00**	**26.19**	**.95842**	**35.50**	**28.17**	**.95487**	**38.00**	**30.16**
.96475	30.55	24.24	.96166	33.05	26.23	.95835	35.55	28.21	.95480	38.05	30.20
.96469	30.60	24.28	.96159	33.10	26.27	.95828	35.60	28.25	.95472	38.10	30.24
.96463	30.65	24.32	.96153	33.15	26.31	.95821	35.65	28.29	.95465	38.15	30.28
.96457	30.70	24.36	.96146	33.20	26.35	.95814	35.70	28.33	.95457	38.20	30.32
.96451	30.75	24.40	.96140	33.25	26.39	.95807	35.75	28.37	.95450	38.25	30.36
.96445	30.80	24.44	.96133	33.30	26.43	.95800	35.80	28.41	.95442	38.30	30.40
.96439	30.85	24.48	.96127	33.35	26.47	.95794	35.85	28.45	.95435	38.35	30.44
.96433	30.90	24.52	.96120	33.40	26.51	.95787	35.90	28.49	.95427	38.40	30.48
.96427	30.95	24.56	.96114	33.45	26.55	.95780	35.95	28.53	.95420	38.45	30.52
.96421	**31.00**	**24.60**	**.96108**	**33.50**	**26.59**	**.95773**	**36.00**	**28.57**	**.95413**	**38.50**	**30.56**
.96415	31.05	24.64	.96101	33.55	26.63	.95766	36.05	28.61	.95405	38.55	30.60
.96409	31.10	24.68	.96095	33.60	26.67	.95759	36.10	28.65	.95398	38.60	30.64
.96403	31.15	24.72	.96088	33.65	26.71	.95752	36.15	28.69	.95390	38.65	30.68
.96396	31.20	24.76	.96082	33.70	26.75	.95745	36.20	28.73	.95383	38.70	30.72
.96390	31.25	24.80	.96075	33.75	26.79	.95738	36.25	28.77	.95375	38.75	30.76
.96384	31.30	24.84	.96069	33.80	26.82	.95731	36.30	28.81	.95368	38.80	30.79
.96378	31.35	24.88	.96062	33.85	26.86	.95724	36.35	28.84	.95360	38.85	30.83
.96372	31.40	24.92	.96056	33.90	26.90	.95717	36.40	28.88	.95353	38.90	30.87
.96366	31.45	24.96	.96049	33.95	26.94	.95710	36.45	28.92	.95345	38.95	30.91
.96360	**31.50**	**25.00**	**.96043**	**34.00**	**26.98**	**.95703**	**36.50**	**28.96**	**.95338**	**39.00**	**30.95**
.96353	31.55	25.04	.96036	34.05	27.02	.95695	36.55	29.00	.95330	39.05	30.99
.96347	31.60	25.08	.96030	34.10	27.06	.95688	36.60	29.04	.95323	39.10	31.03
.96341	31.65	25.12	.96023	34.15	27.10	.95681	36.65	29.08	.95315	39.15	31.07
.96335	31.70	25.16	.96016	34.20	27.14	.95674	36.70	29.12	.95307	39.20	31.11
.96329	31.75	25.20	.96010	34.25	27.18	.95667	36.75	29.16	.95300	39.25	31.14
.96323	31.80	25.24	.96003	34.30	27.22	.95660	36.80	29.20	.95292	39.30	31.18
.96316	31.85	25.28	.95996	34.35	27.26	.95653	36.85	29.24	.95284	39.35	31.22
.96310	31.90	25.32	.95990	34.40	27.30	.95646	36.90	29.29	.95277	39.40	31.26
.96304	31.95	25.36	.95983	34.45	27.34	.95639	36.95	29.32	.95269	39.45	31.30
.96298	**32.00**	**25.40**	**.95977**	**34.50**	**27.38**	**.95632**	**37.00**	**29.36**	**.95262**	**39.50**	**31.34**
.96292	32.05	25.44	.95970	34.55	27.42	.95625	37.05	29.40	.95254	39.55	31.38
.96285	32.10	25.48	.95963	34.60	27.46	.95618	37.10	29.44	.95246	39.60	31.42
.96279	32.15	25.52	.95957	34.65	27.50	.95610	37.15	29.48	.95239	39.65	31.46
.96273	32.20	25.56	.95950	34.70	27.54	.95603	37.20	29.52	.95231	39.70	31.50
.96267	32.25	25.60	.95943	34.75	27.58	.95596	37.25	29.56	.95223	39.75	31.54
.96260	32.30	25.64	.95937	34.80	27.62	.95589	37.30	29.60	.95216	39.80	31.58
.96254	32.35	25.68	.95930	34.85	27.66	.95581	37.35	29.64	.95208	39.85	31.62
.96248	32.40	25.71	.95923	34.90	27.70	.95574	37.40	29.68	.95200	39.90	31.66
.96241	32.45	25.75	.95917	34.95	27.74	.95567	37.45	29.72	.95193	39.95	31.70

TABLE I.—*Percentage of alcohol*—Continued.

[Recalculated from the determinations of Gilpin, Drinkwater, and Squibb.]

Specific gravity at 60° F.	Alcohol.		Specific gravity at 60° F.	Alcohol.		Specific gravity at 60° F.	Alcohol.		Specific gravity at 60° F.	Alcohol.	
	Per cent by volume.	Grams per 100 cc.		Per cent by volume.	Grams per 100 cc.		Per cent by volume.	Grams per 100 cc.		Per cent by volume.	Grams per 100 cc.
.95185	**40.00**	**31.74**	**.94786**	**42.50**	**33.73**	**.94364**	**45.00**	**35.71**	**.93916**	**47.50**	**37.69**
.95177	40.05	31.78	.94778	42.55	33.77	.94355	45.05	35.75	.92906	47.55	37.73
.95169	40.10	31.82	.94770	42.60	33.81	.94346	45.10	35.79	.93898	47.60	37.77
.95161	40.15	31.86	.94761	42.65	33.85	.94338	45.15	35.83	.93888	47.65	37.81
.95154	40.20	31.90	.94753	42.70	33.89	.94329	45.20	35.87	.93879	47.70	37.85
.95146	40.25	31.94	.94745	42.75	33.93	.94320	45.25	35.91	.93870	47.75	37.89
.95138	40.30	31.98	.94737	42.80	33.97	.94311	45.30	35.95	.93861	47.80	37.93
.95130	40.35	32.02	.94729	42.85	34.00	.94302	45.35	35.99	.93852	47.85	37.97
.95122	40.40	32.06	.94720	42.90	34.04	.94294	45.40	36.03	.93842	47.90	38.01
.95114	40.45	32.10	.94712	42.95	34.08	.94285	45.45	36.07	.93833	47.95	38.05
.95107	**40.50**	**32.14**	**.94704**	**43.00**	**34.12**	**.94276**	**45.50**	**36.11**	**.93824**	**48.00**	**38.09**
.95099	40.55	32.18	.94696	43.05	34.16	.94267	45.55	36.15	.93815	48.05	38.13
.95091	40.60	32.22	.94687	43.10	34.20	.94258	45.60	36.19	.93805	48.10	38.17
.95083	40.65	32.26	.94679	43.15	34.24	.94250	45.65	36.23	.93796	48.15	38.21
.95075	40.70	32.30	.94670	43.20	34.28	.94241	45.70	36.26	.93786	48.20	38.25
.95067	40.75	32.34	.94662	43.25	34.32	.94232	45.75	36.30	.93777	48.25	38.29
.95059	40.80	32.38	.94654	43.30	34.36	.94223	45.80	36.34	.93768	48.30	38.33
.95052	40.85	32.42	.94645	43.35	34.40	.94214	45.85	36.38	.93758	48.35	38.37
.95044	40.90	32.46	.94637	43.40	34.44	.94206	45.90	36.42	.93749	48.40	38.41
.95036	40.95	32.50	.94628	43.45	34.48	.94197	45.95	36.46	.93739	48.45	38.45
.95028	**41.00**	**32.54**	**.94620**	**43.50**	**34.52**	**.94188**	**46.00**	**36.50**	**.93730**	**48.50**	**38.49**
.95020	41.05	32.58	.94612	43.55	34.56	.94179	46.05	36.54	.93721	48.55	38.53
.95012	41.10	32.62	.94603	43.60	34.60	.94170	46.10	36.58	.93711	48.60	38.57
.95004	41.15	32.66	.94595	43.65	34.64	.94161	46.15	36.62	.93702	48.65	38.61
.94996	41.20	32.70	.94586	43.70	34.68	.94152	46.20	36.66	.93692	48.70	38.65
.94988	41.25	32.74	.94578	43.75	34.72	.94143	46.25	36.70	.93683	48.75	38.68
.94980	41.30	32.78	.94570	43.80	34.76	.94134	46.30	36.74	.93679	48.80	38.72
.94972	41.35	32.82	.94561	43.85	34.80	.94125	46.35	36.78	.93664	48.85	38.76
.94964	41.40	32.86	.94553	43.90	34.84	.94116	46.40	36.82	.93655	48.90	38.80
.94956	41.45	32.90	.94544	43.95	34.88	.94107	46.45	36.86	.93645	48.95	38.84
.94948	**41.50**	**32.93**	**.94536**	**44.00**	**34.91**	**.94098**	**46.50**	**36.90**	**.93636**	**49.00**	**38.88**
.94940	41.55	32.97	.94527	44.05	34.95	.94089	46.55	36.94	.93626	49.05	38.92
.94932	41.60	33.01	.94519	44.10	34.99	.94080	46.60	36.98	.93617	49.10	38.96
.94924	41.65	33.05	.94510	44.15	35.03	.94071	46.65	37.02	.93607	49.15	39.00
.94916	41.70	33.09	.94502	44.20	35.07	.94062	46.70	37.06	.93598	49.20	39.04
.94908	41.75	33.13	.94493	44.25	35.11	.94053	46.75	37.09	.93588	49.25	39.08
.94900	41.80	33.17	.94484	44.30	35.15	.94044	46.80	37.13	.93578	49.30	39.12
.94892	41.85	33.21	.94476	44.35	35.19	.94035	46.85	37.17	.93569	49.35	39.16
.94884	41.90	33.25	.94467	44.40	35.23	.94026	46.90	37.21	.93559	49.40	39.20
.94876	41.95	33.29	.94459	44.45	35.27	.94017	46.95	37.25	.93550	49.45	39.24
.94868	**42.00**	**33.33**	**.94450**	**44.50**	**35.31**	**.94008**	**47.00**	**37.29**	**.93540**	**49.50**	**39.28**
.94860	42.05	33.37	.94441	44.55	35.35	.93999	47.05	37.33	.93530	49.55	39.32
.94852	42.10	33.41	.94433	44.60	35.39	.93990	47.10	37.37	.93521	49.60	39.36
.94843	42.15	33.45	.94424	44.65	35.43	.93980	47.15	37.41	.93511	49.65	39.40
.94835	42.20	33.49	.94416	44.70	35.47	.93971	47.20	37.45	.93502	49.70	39.44
.94827	42.25	33.53	.94407	44.75	35.51	.93962	47.25	37.49	.93492	49.75	39.48
.94810	42.30	33.57	.94398	44.80	35.55	.93953	47.30	37.53	.93482	49.80	39.52
.94811	42.35	33.61	.94390	44.85	35.59	.93944	47.35	37.57	.93473	49.85	39.56
.94802	42.40	33.65	.94381	44.90	35.63	.93934	47.40	37.61	.93463	49.90	39.60
.94794	42.45	33.69	.94373	44.95	35.67	.93925	47.45	37.65	.93454	49.95	39.63

TABLE II.—*Extract in must.*

Specific gravity at 15°.	Extract.		Specific gravity at 15°.	Extract.		Specific gravity at 15°.	Extract.		Specific gravity at 15°.	Extract.	
	Per cent by weight.	Grams per 100 cc.		Per cent by weight.	Grams per 100 cc.		Per cent by weight.	Grams per 100 cc.		Per cent by weight.	Grams per 100 cc.
1.0000	0.00	0.00	1.0065	1.69	1.70	1.0130	3.35	3.39	1.0195	5.06	5.16
1.0001	0.03	0.03	1.0066	1.72	1.73	1.0131	3.38	3.42	1.0196	5.09	5.19
1.0002	0.05	0.05	1.0067	1.74	1.75	1.0132	3.41	3.46	1.0197	5.12	5.22
1.0003	0.08	0.08	1.0068	1.77	1.78	1.0133	3.43	3.48	1.0198	5.15	5.25
1.0004	0.10	0.10	1.0069	1.79	1.80	1.0134	3.46	3.51	1.0199	5.17	5.27
1.0005	0.13	0.13	1.0070	1.82	1.83	1.0135	3.48	3.53	1.0200	5.20	5.30
1.0006	0.16	0.16	1.0071	1.84	1.85	1.0136	3.51	3.56	1.0201	5.23	5.34
1.0007	0.18	0.18	1.0072	1.87	1.88	1.0137	3.54	3.59	1.0202	5.25	5.36
1.0008	0.21	0.21	1.0073	1.90	1.91	1.0138	3.56	3.61	1.0203	5.28	5.39
1.0009	0.24	0.24	1.0074	1.92	1.93	1.0139	3.59	3.64	1.0204	5.30	5.41
1.0010	0.26	0.26	1.0075	1.95	1.96	1.0140	3.61	3.66	1.0205	5.33	5.44
1.0011	0.29	0.29	1.0076	1.97	1.98	1.0141	3.64	3.69	1.0206	5.35	5.46
1.0012	0.31	0.31	1.0077	2.00	2.02	1.0142	3.66	3.71	1.0207	5.38	5.49
1.0013	0.34	0.34	1.0078	2.02	2.04	1.0143	3.69	3.74	1.0208	5.40	5.51
1.0014	0.37	0.37	1.0079	2.05	2.07	1.0144	3.72	3.77	1.0209	5.43	5.54
1.0015	0.39	0.39	1.0080	2.07	2.09	1.0145	3.74	3.79	1.0210	5.45	5.56
1.0016	0.42	0.42	1.0081	2.10	2.12	1.0146	3.77	3.83	1.0211	5.48	5.60
1.0017	0.45	0.45	1.0082	2.12	2.14	1.0147	3.79	3.85	1.0212	5.50	5.62
1.0018	0.47	0.47	1.0083	2.15	2.17	1.0148	3.82	3.88	1.0213	5.53	5.65
1.0019	0.50	0.50	1.0084	2.17	2.19	1.0149	3.85	3.91	1.0214	5.55	5.67
1.0020	0.52	0.52	1.0085	2.20	2.22	1.0150	3.87	3.93	1.0215	5.57	5.69
1.0021	0.55	0.55	1.0086	2.23	2.25	1.0151	3.90	3.96	1.0216	5.60	5.72
1.0022	0.58	0.58	1.0087	2.25	2.27	1.0152	3.92	3.98	1.0217	5.62	5.74
1.0023	0.60	0.60	1.0088	2.28	2.30	1.0153	3.95	4.01	1.0218	5.65	5.77
1.0024	0.63	0.63	1.0089	2.30	2.32	1.0154	3.97	4.03	1.0219	5.67	5.79
1.0025	0.66	0.66	1.0090	2.33	2.35	1.0155	4.00	4.06	1.0220	5.70	5.83
1.0026	0.68	0.68	1.0091	2.35	2.37	1.0156	4.03	4.09	1.0221	5.72	5.85
1.0027	0.71	0.71	1.0092	2.38	2.40	1.0157	4.05	4.11	1.0222	5.75	5.88
1.0028	0.73	0.73	1.0093	2.41	2.43	1.0158	4.08	4.14	1.0223	5.77	5.90
1.0029	0.76	0.76	1.0094	2.43	2.45	1.0159	4.10	4.17	1.0224	5.80	5.93
1.0030	0.79	0.79	1.0095	2.46	2.48	1.0160	4.13	4.20	1.0225	5.82	5.95
1.0031	0.81	0.81	1.0096	2.48	2.50	1.0161	4.16	4.23	1.0226	5.84	5.97
1.0032	0.84	0.84	1.0097	2.51	2.53	1.0162	4.18	4.25	1.0227	5.87	6.00
1.0033	0.87	0.87	1.0098	2.53	2.55	1.0163	4.21	4.28	1.0228	5.89	6.02
1.0034	0.89	0.89	1.0099	2.56	2.59	1.0164	4.23	4.30	1.0229	5.92	6.06
1.0035	0.92	0.92	1.0100	2.58	2.61	1.0165	4.26	4.33	1.0230	5.94	6.08
1.0036	0.94	0.94	1.0101	2.61	2.64	1.0166	4.28	4.35	1.0231	5.97	6.11
1.0037	0.97	0.97	1.0102	2.64	2.67	1.0167	4.31	4.38	1.0232	5.99	6.13
1.0038	1.00	1.00	1.0103	2.66	2.69	1.0168	4.34	4.41	1.0233	6.02	6.16
1.0039	1.02	1.02	1.0104	2.69	2.72	1.0169	4.36	4.43	1.0234	6.04	6.18
1.0040	1.05	1.05	1.0105	2.71	2.74	1.0170	4.39	4.46	1.0235	6.07	6.21
1.0041	1.08	1.08	1.0106	2.74	2.77	1.0171	4.42	4.50	1.0236	6.09	6.23
1.0042	1.10	1.10	1.0107	2.76	2.79	1.0172	4.44	4.52	1.0237	6.11	6.25
1.0043	1.13	1.13	1.0108	2.79	2.82	1.0173	4.47	4.55	1.0238	6.14	6.29
1.0044	1.15	1.16	1.0109	2.82	2.85	1.0174	4.50	4.58	1.0239	6.16	6.31
1.0045	1.18	1.19	1.0110	2.84	2.87	1.0175	4.53	4.61	1.0240	6.19	6.34
1.0046	1.21	1.22	1.0111	2.87	2.90	1.0176	4.55	4.63	1.0241	6.21	6.36
1.0047	1.23	1.24	1.0112	2.89	2.92	1.0177	4.58	4.66	1.0242	6.24	6.39
1.0048	1.26	1.27	1.0113	2.92	2.95	1.0178	4.61	4.69	1.0243	6.26	6.41
1.0049	1.29	1.30	1.0114	2.94	2.97	1.0179	4.63	4.71	1.0244	6.29	6.44
1.0050	1.31	1.32	1.0115	2.97	3.00	1.0180	4.66	4.74	1.0245	6.31	6.46
1.0051	1.34	1.35	1.0116	2.99	3.02	1.0181	4.69	4.77	1.0246	6.34	6.50
1.0052	1.36	1.37	1.0117	3.02	3.06	1.0182	4.71	4.80	1.0247	6.36	6.52
1.0053	1.39	1.40	1.0118	3.05	3.09	1.0183	4.74	4.83	1.0248	6.39	6.55
1.0054	1.41	1.42	1.0119	3.07	3.11	1.0184	4.77	4.86	1.0249	6.41	6.57
1.0055	1.44	1.45	1.0120	3.10	3.14	1.0185	4.79	4.88	1.0250	6.44	6.60
1.0056	1.46	1.47	1.0121	3.12	3.16	1.0186	4.82	4.91	1.0251	6.47	6.63
1.0057	1.49	1.50	1.0122	3.15	3.19	1.0187	4.85	4.94	1.0252	6.50	6.66
1.0058	1.51	1.52	1.0123	3.17	3.21	1.0188	4.88	4.97	1.0253	6.52	6.68
1.0059	1.54	1.55	1.0124	3.20	3.24	1.0189	4.90	4.99	1.0254	6.55	6.72
1.0060	1.56	1.57	1.0125	3.23	3.27	1.0190	4.93	5.02	1.0255	6.58	6.75
1.0061	1.59	1.60	1.0126	3.25	3.29	1.0191	4.96	5.05	1.0256	6.61	6.78
1.0062	1.62	1.63	1.0127	3.28	3.32	1.0192	4.98	5.08	1.0257	6.63	6.80
1.0063	1.64	1.65	1.0128	3.30	3.34	1.0193	5.01	5.11	1.0258	6.66	6.83
1.0064	1.67	1.68	1.0129	3.33	3.37	1.0194	5.04	5.14	1.0259	6.69	6.86

TABLE II.—*Extract in must*—Continued.

Specific gravity at 15°.	Extract.		Specific gravity at 15°.	Extract.		Specific gravity at 15°.	Extract.		Specific gravity at 15°.	Extract.	
	Per cent by weight.	Grams per 100 cc.		Per cent by weight.	Grams per 100 cc.		Per cent by weight.	Grams per 100 cc.		Per cent by weight.	Grams per 100 cc.
1.0260	6.71	6.88	1.0325	8.27	8.54	1.0390	9.92	10.31	1.0455	11.53	12.05
1.0261	6.74	6.92	1.0326	8.29	8.56	1.0391	9.95	10.34	1.0456	11.55	12.08
1.0262	6.77	6.95	1.0327	8.32	8.59	1.0392	9.97	10.36	1.0457	11.57	12.10
1.0263	6.80	6.98	1.0328	8.34	8.61	1.0393	9.99	10.38	1.0458	11.60	12.13
1.0264	6.82	7.00	1.0329	8.37	8.65	1.0394	10.02	10.41	1.0459	11.62	12.15
1.0265	6.85	7.03	1.0330	8.40	8.68	1.0395	10.04	10.44	1.0460	11.65	12.19
1.0266	6.88	7.06	1.0331	8.43	8.71	1.0396	10.06	10.46	1.0461	11.67	12.21
1.0267	6.91	7.09	1.0332	8.45	8.73	1.0397	10.09	10.49	1.0462	11.70	12.24
1.0268	6.93	7.12	1.0333	8.48	8.76	1.0398	10.11	10.51	1.0463	11.72	12.26
1.0269	6.96	7.15	1.0334	8.51	8.79	1.0399	10.13	10.53	1.0464	11.75	12.30
1.0270	6.99	7.18	1.0335	8.53	8.82	1.0400	10.16	10.57	1.0465	11.77	12.32
1.0271	7.01	7.20	1.0336	8.56	8.85	1.0401	10.18	10.59	1.0466	11.79	12.34
1.0272	7.04	7.23	1.0337	8.59	8.88	1.0402	10.20	10.61	1.0467	11.82	12.37
1.0273	7.07	7.26	1.0338	8.61	8.90	1.0403	10.23	10.64	1.0468	11.84	12.39
1.0274	7.10	7.29	1.0339	8.64	8.93	1.0404	10.25	10.66	1.0469	11.87	12.43
1.0275	7.12	7.32	1.0340	8.67	8.96	1.0405	10.27	10.69	1.0470	11.89	12.45
1.0276	7.15	7.35	1.0341	8.70	9.00	1.0406	10.30	10.72	1.0471	11.92	12.48
1.0277	7.18	7.38	1.0342	8.72	9.02	1.0407	10.32	10.74	1.0472	11.94	12.50
1.0278	7.21	7.41	1.0343	8.75	9.05	1.0408	10.35	10.77	1.0473	11.97	12.54
1.0279	7.23	7.43	1.0344	8.78	9.08	1.0409	10.37	10.79	1.0474	11.99	12.56
1.0280	7.26	7.46	1.0345	8.80	9.10	1.0410	10.40	10.83	1.0475	12.01	12.58
1.0281	7.28	7.48	1.0346	8.83	9.14	1.0411	10.42	10.85	1.0476	12.04	12.61
1.0282	7.30	7.51	1.0347	8.86	9.17	1.0412	10.45	10.88	1.0477	12.06	12.64
1.0283	7.33	7.54	1.0348	8.88	9.19	1.0413	10.47	10.90	1.0478	12.09	12.67
1.0284	7.35	7.56	1.0349	8.91	9.22	1.0414	10.50	10.93	1.0479	12.11	12.69
1.0285	7.37	7.58	1.0350	8.94	9.25	1.0415	10.52	10.96	1.0480	12.14	12.72
1.0286	7.39	7.60	1.0351	8.97	9.28	1.0416	10.55	10.99	1.0481	12.16	12.74
1.0287	7.42	7.63	1.0352	8.99	9.31	1.0417	10.57	11.01	1.0482	12.19	12.78
1.0288	7.44	7.65	1.0353	9.02	9.34	1.0418	10.60	11.04	1.0483	12.21	12.80
1.0289	7.46	7.68	1.0354	9.05	9.37	1.0419	10.62	11.06	1.0484	12.23	12.82
1.0290	7.48	7.70	1.0355	9.07	9.39	1.0420	10.65	11.10	1.0485	12.26	12.85
1.0291	7.51	7.73	1.0356	9.10	9.42	1.0421	10.67	11.12	1.0486	12.28	12.88
1.0292	7.53	7.75	1.0357	9.13	9.46	1.0422	10.70	11.15	1.0487	12.31	12.91
1.0293	7.55	7.77	1.0358	9.15	9.48	1.0423	10.72	11.17	1.0488	12.33	12.93
1.0294	7.57	7.79	1.0359	9.18	9.51	1.0424	10.75	11.21	1.0489	12.36	12.96
1.0295	7.60	7.82	1.0360	9.21	9.54	1.0425	10.77	11.23	1.0490	12.38	12.99
1.0296	7.62	7.85	1.0361	9.24	9.57	1.0426	10.80	11.26	1.0491	12.41	13.02
1.0297	7.64	7.87	1.0362	9.26	9.60	1.0427	10.82	11.28	1.0492	12.43	13.04
1.0298	7.66	7.89	1.0363	9.29	9.63	1.0428	10.85	11.31	1.0493	12.45	13.06
1.0299	7.69	7.92	1.0364	9.31	9.65	1.0429	10.88	11.35	1.0494	12.48	13.10
1.0300	7.71	7.94	1.0365	9.34	9.68	1.0430	10.90	11.37	1.0495	12.50	13.12
1.0301	7.73	7.96	1.0366	9.36	9.70	1.0431	10.93	11.40	1.0496	12.53	13.15
1.0302	7.75	7.98	1.0367	9.38	9.72	1.0432	10.95	11.42	1.0497	12.55	13.17
1.0303	7.77	8.01	1.0368	9.41	9.76	1.0433	10.98	11.46	1.0498	12.58	13.21
1.0304	7.80	8.04	1.0369	9.43	9.78	1.0434	11.00	11.48	1.0499	12.60	13.23
1.0305	7.82	8.06	1.0370	9.45	9.80	1.0435	11.03	11.51	1.0500	12.63	13.26
1.0306	7.84	8.08	1.0371	9.48	9.83	1.0436	11.05	11.53	1.0501	12.65	13.28
1.0307	7.86	8.10	1.0372	9.50	9.85	1.0437	11.08	11.56	1.0502	12.67	13.31
1.0308	7.89	8.13	1.0373	9.52	9.88	1.0438	11.10	11.59	1.0503	12.70	13.34
1.0309	7.91	8.15	1.0374	9.55	9.91	1.0439	11.13	11.62	1.0504	12.72	13.36
1.0310	7.93	8.18	1.0375	9.57	9.93	1.0440	11.15	11.64	1.0505	12.75	13.39
1.0311	7.95	8.20	1.0376	9.59	9.95	1.0441	11.18	11.67	1.0506	12.77	13.42
1.0312	7.98	8.23	1.0377	9.62	9.98	1.0442	11.20	11.70	1.0507	12.80	13.45
1.0313	8.00	8.25	1.0378	9.64	10.00	1.0443	11.23	11.73	1.0508	12.82	13.47
1.0314	8.02	8.27	1.0379	9.66	10.03	1.0444	11.25	11.75	1.0509	12.85	13.50
1.0315	8.04	8.29	1.0380	9.69	10.06	1.0445	11.28	11.78	1.0510	12.87	13.53
1.0316	8.07	8.33	1.0381	9.71	10.08	1.0446	11.30	11.80	1.0511	12.90	13.56
1.0317	8.09	8.35	1.0382	9.73	10.10	1.0447	11.33	11.84	1.0512	12.92	13.58
1.0318	8.11	8.37	1.0383	9.76	10.13	1.0448	11.35	11.86	1.0513	12.94	13.60
1.0319	8.13	8.39	1.0384	9.78	10.16	1.0449	11.38	11.89	1.0514	12.97	13.64
1.0320	8.16	8.42	1.0385	9.81	10.19	1.0450	11.40	11.91	1.0515	12.99	13.66
1.0321	8.18	8.44	1.0386	9.83	10.21	1.0451	11.43	11.95	1.0516	13.02	13.69
1.0322	8.20	8.46	1.0387	9.85	10.23	1.0452	11.45	11.97	1.0517	13.04	13.71
1.0323	8.22	8.49	1.0388	9.88	10.26	1.0453	11.48	12.00	1.0518	13.07	13.75
1.0324	8.25	8.52	1.0389	9.90	10.29	1.0454	11.50	12.02	1.0519	13.09	13.77

TABLE II.—*Extract in must*—Continued.

Specific gravity at 15°.	Extract.		Specific gravity at 15°.	Extract.		Specific gravity at 15°.	Extract.		Specific gravity at 15°.	Extract.	
	Per cent by weight.	Grams per 100 cc.		Per cent by weight.	Grams per 100 cc.		Per cent by weight.	Grams per 100 cc.		Per cent by weight.	Grams per 100 cc.
1.0520	13.12	13.80	1.0585	14.75	15.61	1.0650	16.25	17.31	1.0715	17.81	19.08
1.0521	13.14	13.82	1.0586	14.78	15.65	1.0651	16.27	17.33	1.0716	17.84	19.12
1.0522	13.16	13.85	1.0587	14.81	15.68	1.0652	16.30	17.36	1.0717	17.86	19.14
1.0523	13.19	13.88	1.0588	14.83	15.70	1.0653	16.32	17.39	1.0718	17.88	19.16
1.0524	13.21	13.90	1.0589	14.86	15.74	1.0654	16.35	17.42	1.0719	17.90	19.19
1.0525	13.24	13.94	1.0590	14.89	15.77	1.0655	16.37	17.44	1.0720	17.93	19.22
1.0526	13.26	13.96	1.0591	14.91	15.79	1.0656	16.40	17.48	1.0721	17.95	19.24
1.0527	13.29	13.99	1.0592	14.94	15.82	1.0657	16.42	17.50	1.0722	17.97	19.27
1.0528	13.31	14.01	1.0593	14.96	15.85	1.0658	16.45	17.53	1.0723	17.99	19.29
1.0529	13.34	14.05	1.0594	14.99	15.88	1.0659	16.47	17.56	1.0724	18.02	19.32
1.0530	13.36	14.07	1.0595	15.02	15.91	1.0660	16.50	17.59	1.0725	18.04	19.35
1.0531	13.38	14.09	1.0596	15.04	15.94	1.0661	16.52	17.61	1.0726	18.06	19.37
1.0532	13.41	14.12	1.0597	15.07	15.97	1.0662	16.54	17.63	1.0727	18.08	19.39
1.0533	13.43	14.15	1.0598	15.09	15.99	1.0663	16.57	17.67	1.0728	18.11	19.43
1.0534	13.46	14.18	1.0599	15.11	16.02	1.0664	16.59	17.69	1.0729	18.13	19.45
1.0535	13.48	14.20	1.0600	15.14	16.05	1.0665	16.62	17.73	1.0730	18.15	19.47
1.0536	13.51	14.23	1.0601	15.16	16.07	1.0666	16.64	17.75	1.0731	18.17	19.50
1.0537	13.53	14.26	1.0602	15.18	16.09	1.0667	16.67	17.78	1.0732	18.20	19.53
1.0538	13.56	14.29	1.0603	15.20	16.12	1.0668	16.69	17.80	1.0733	18.22	19.55
1.0539	13.58	14.31	1.0604	15.23	16.15	1.0669	16.72	17.84	1.0734	18.24	19.58
1.0540	13.61	14.34	1.0605	15.25	16.17	1.0670	16.74	17.86	1.0735	18.26	19.60
1.0541	13.63	14.37	1.0606	15.27	16.20	1.0671	16.76	17.88	1.0736	18.29	19.64
1.0542	13.66	14.40	1.0607	15.29	16.22	1.0672	16.79	17.92	1.0737	18.31	19.66
1.0543	13.68	14.42	1.0608	15.31	16.24	1.0673	16.81	17.94	1.0738	18.33	19.68
1.0544	13.71	14.46	1.0609	15.34	16.27	1.0674	16.84	17.98	1.0739	18.35	19.71
1.0545	13.73	14.48	1.0610	15.36	16.30	1.0675	16.86	18.00	1.0740	18.38	19.74
1.0546	13.76	14.51	1.0611	15.38	16.32	1.0676	16.89	18.03	1.0741	18.40	19.76
1.0547	13.78	14.53	1.0612	15.40	16.34	1.0677	16.91	18.05	1.0742	18.42	19.79
1.0548	13.81	14.57	1.0613	15.43	16.38	1.0678	16.94	18.09	1.0743	18.44	19.81
1.0549	13.83	14.59	1.0614	15.45	16.40	1.0679	16.96	18.11	1.0744	18.47	19.84
1.0550	13.86	14.62	1.0615	15.47	16.42	1.0680	16.99	18.15	1.0745	18.49	19.87
1.0551	13.88	14.64	1.0616	15.49	16.44	1.0681	17.01	18.17	1.0746	18.51	19.89
1.0552	13.91	14.68	1.0617	15.52	16.48	1.0682	17.03	18.19	1.0747	18.53	19.91
1.0553	13.93	14.70	1.0618	15.54	16.50	1.0683	17.06	18.23	1.0748	18.55	19.94
1.0554	13.96	14.73	1.0619	15.56	16.52	1.0684	17.08	18.25	1.0749	18.57	19.96
1.0555	13.98	14.76	1.0620	15.58	16.55	1.0685	17.11	18.28	1.0750	18.59	19.98
1.0556	14.01	14.79	1.0621	15.60	16.57	1.0686	17.13	18.31	1.0751	18.62	20.02
1.0557	14.03	14.81	1.0622	15.63	16.60	1.0687	17.16	18.34	1.0752	18.64	20.04
1.0558	14.06	14.84	1.0623	15.65	16.62	1.0688	17.18	18.36	1.0753	18.66	20.07
1.0559	14.08	14.87	1.0624	15.67	16.64	1.0689	17.21	18.40	1.0754	18.68	20.09
1.0560	14.11	14.90	1.0625	15.69	16.66	1.0690	17.23	18.42	1.0755	18.70	20.11
1.0561	14.13	14.92	1.0626	15.72	16.70	1.0691	17.25	18.44	1.0756	18.72	20.14
1.0562	14.16	14.96	1.0627	15.74	16.73	1.0692	17.28	18.48	1.0757	18.74	20.16
1.0563	14.18	14.98	1.0628	15.76	16.75	1.0693	17.30	18.50	1.0758	18.76	20.18
1.0564	14.21	15.01	1.0629	15.78	16.77	1.0694	17.33	18.53	1.0759	18.78	20.21
1.0565	14.23	15.03	1.0630	15.80	16.80	1.0695	17.35	18.56	1.0760	18.81	20.24
1.0566	14.26	15.07	1.0631	15.83	16.83	1.0696	17.38	18.59	1.0761	18.83	20.26
1.0567	14.28	15.09	1.0632	15.85	16.85	1.0697	17.40	18.61	1.0762	18.85	20.29
1.0568	14.31	15.12	1.0633	15.87	16.87	1.0698	17.43	18.65	1.0763	18.87	20.31
1.0569	14.33	15.15	1.0634	15.89	16.90	1.0699	17.45	18.67	1.0764	18.89	20.33
1.0570	14.36	15.18	1.0635	15.92	16.93	1.0700	17.48	18.70	1.0765	18.91	20.36
1.0571	14.38	15.20	1.0636	15.94	16.95	1.0701	17.50	18.73	1.0766	18.93	20.38
1.0572	14.41	15.23	1.0637	15.96	16.98	1.0702	17.52	18.75	1.0767	18.95	20.40
1.0573	14.44	15.27	1.0638	15.98	17.00	1.0703	17.54	18.77	1.0768	18.97	20.43
1.0574	14.46	15.29	1.0639	16.01	17.03	1.0704	17.57	18.81	1.0769	19.00	20.46
1.0575	14.49	15.32	1.0640	16.03	17.06	1.0705	17.59	18.83	1.0770	19.02	20.48
1.0576	14.52	15.36	1.0641	16.05	17.08	1.0706	17.61	18.85	1.0771	19.04	20.51
1.0577	14.54	15.38	1.0642	16.07	17.10	1.0707	17.63	18.88	1.0772	19.06	20.53
1.0578	14.57	15.41	1.0643	16.09	17.12	1.0708	17.66	18.91	1.0773	19.08	20.55
1.0579	14.59	15.43	1.0644	16.12	17.16	1.0709	17.68	18.93	1.0774	19.10	20.58
1.0580	14.62	15.47	1.0645	16.14	17.18	1.0710	17.70	18.96	1.0775	19.12	20.60
1.0581	14.65	15.50	1.0646	16.16	17.20	1.0711	17.72	18.98	1.0776	19.14	20.63
1.0582	14.67	15.52	1.0647	16.18	17.23	1.0712	17.75	19.01	1.0777	19.17	20.66
1.0583	14.70	15.56	1.0648	16.21	17.26	1.0713	17.77	19.04	1.0778	19.19	20.68
1.0584	14.73	15.59	1.0649	16.23	17.28	1.0714	17.79	19.06	1.0779	19.21	20.71

TABLE II.—*Extract in must*—Continued.

Specific gravity at 15°.	Extract.		Specific gravity at 15°.	Extract.		Specific gravity at 15°.	Extract.		Specific gravity at 15°.	Extract.	
	Per cent by weight.	Grams per 100 cc.		Per cent by weight.	Grams per 100 cc.		Per cent by weight.	Grams per 100 cc.		Per cent by weight.	Grams per 100 cc.
1.0780	19.23	20.73	1.0845	20.70	22.45	1.0910	22.19	24.21	1.0975	23.59	25.89
1.0781	19.25	20.75	1.0846	20.73	22.48	1.0911	22.21	24.24	1.0976	23.61	25.92
1.0782	19.27	20.78	1.0847	20.75	22.50	1.0912	22.23	24.26	1.0977	23.63	25.94
1.0783	19.29	20.80	1.0848	20.77	22.53	1.0913	22.26	24.29	1.0978	23.65	25.97
1.0784	19.31	20.82	1.0849	20.79	22.55	1.0914	22.28	24.31	1.0979	23.67	25.99
1.0785	19.33	20.85	1.0850	20.81	22.58	1.0915	22.30	24.34	1.0980	23.69	26.01
1.0786	19.36	20.88	1.0851	20.83	22.61	1.0916	22.32	24.37	1.0981	23.71	26.04
1.0787	19.38	20.90	1.0852	20.86	22.64	1.0917	22.34	24.39	1.0982	23.73	26.06
1.0788	19.40	20.93	1.0853	20.88	22.66	1.0918	22.37	24.42	1.0983	23.76	26.09
1.0789	19.42	20.95	1.0854	20.90	22.68	1.0919	22.39	24.44	1.0984	23.78	26.11
1.0790	19.44	20.98	1.0855	20.93	22.72	1.0920	22.41	24.47	1.0985	23.80	26.14
1.0791	19.46	21.00	1.0856	20.95	22.75	1.0921	22.43	24.49	1.0986	23.82	26.17
1.0792	19.49	21.03	1.0857	20.98	22.78	1.0922	22.45	24.51	1.0987	23.84	26.19
1.0793	19.51	21.06	1.0858	21.01	22.81	1.0923	22.48	24.54	1.0988	23.86	26.22
1.0794	19.53	21.08	1.0859	21.04	22.84	1.0924	22.50	24.56	1.0989	23.88	26.24
1.0795	19.56	21.11	1.0860	21.06	22.87	1.0925	22.52	24.60	1.0990	23.90	26.27
1.0796	19.58	21.14	1.0861	21.09	22.90	1.0926	22.54	24.62	1.0991	23.92	26.30
1.0797	19.60	21.16	1.0862	21.11	22.93	1.0927	22.56	24.64	1.0992	23.94	26.32
1.0798	19.63	21.20	1.0863	21.13	22.96	1.0928	22.59	24.67	1.0993	23.97	26.35
1.0799	19.65	21.22	1.0864	21.16	22.99	1.0929	22.61	24.70	1.0994	23.99	26.37
1.0800	19.67	21.24	1.0865	21.19	23.02	1.0930	22.63	24.73	1.0995	24.01	26.40
1.0801	19.70	21.28	1.0866	21.22	23.06	1.0931	22.65	24.76	1.0996	24.03	26.42
1.0802	19.72	21.30	1.0867	21.25	23.09	1.0932	22.67	24.78	1.0997	24.05	26.44
1.0803	19.74	21.33	1.0868	21.28	23.12	1.0933	22.69	24.81	1.0998	24.07	26.47
1.0804	19.77	21.36	1.0869	21.30	23.15	1.0934	22.71	24.83	1.0999	24.09	26.49
1.0805	19.79	21.38	1.0870	21.33	23.18	1.0935	22.73	24.86	1.1000	24.11	26.52
1.0806	19.81	21.41	1.0871	21.35	23.21	1.0936	22.75	24.89	1.1001	24.13	26.55
1.0807	19.84	21.43	1.0872	21.37	23.23	1.0937	22.77	24.91	1.1002	24.15	26.57
1.0808	19.86	21.46	1.0873	21.39	23.26	1.0938	22.80	24.94	1.1003	24.17	26.60
1.0809	19.88	21.49	1.0874	21.41	23.28	1.0939	22.82	24.96	1.1004	24.19	26.62
1.0810	19.91	21.52	1.0875	21.43	23.31	1.0940	22.84	24.99	1.1005	24.21	26.65
1.0811	19.93	21.55	1.0876	21.45	23.33	1.0941	22.86	25.01	1.1006	24.23	26.68
1.0812	19.96	21.58	1.0877	21.47	23.36	1.0942	22.88	25.03	1.1007	24.25	26.70
1.0813	19.98	21.60	1.0878	21.49	23.38	1.0943	22.90	25.06	1.1008	24.28	26.73
1.0814	20.00	21.63	1.0879	21.51	23.40	1.0944	22.92	25.08	1.1009	24.30	26.75
1.0815	20.03	21.66	1.0880	21.54	23.43	1.0945	22.94	25.11	1.1010	24.32	26.78
1.0816	20.05	21.69	1.0881	21.56	23.45	1.0946	22.96	25.14	1.1011	24.34	26.81
1.0817	20.07	21.71	1.0882	21.58	23.48	1.0947	22.98	25.16	1.1012	24.36	26.83
1.0818	20.10	21.74	1.0883	21.60	23.50	1.0948	23.00	25.18	1.1013	24.39	26.86
1.0819	20.12	21.77	1.0884	21.62	23.52	1.0949	23.03	25.21	1.1014	24.41	26.88
1.0820	20.14	21.79	1.0885	21.64	23.55	1.0950	23.05	25.24	1.1015	24.43	26.91
1.0821	20.17	21.83	1.0886	21.66	23.58	1.0951	23.07	25.26	1.1016	24.45	26.93
1.0822	20.19	21.85	1.0887	21.68	23.60	1.0952	23.10	25.29	1.1017	24.47	26.95
1.0823	20.21	21.87	1.0888	21.71	23.63	1.0953	23.12	25.31	1.1018	24.49	26.98
1.0824	20.24	21.91	1.0889	21.73	23.66	1.0954	23.14	25.34	1.1019	24.51	27.00
1.0825	20.26	21.93	1.0890	21.75	23.69	1.0955	23.16	25.37	1.1020	24.53	27.03
1.0826	20.28	21.96	1.0891	21.77	23.72	1.0956	23.18	25.39	1.1021	24.55	27.06
1.0827	20.31	21.99	1.0892	21.79	23.74	1.0957	23.20	25.42	1.1022	24.57	27.08
1.0828	20.33	22.01	1.0893	21.82	23.77	1.0958	23.23	25.45	1.1023	24.60	27.11
1.0829	20.35	22.04	1.0894	21.84	23.79	1.0959	23.25	25.47	1.1024	24.62	27.14
1.0830	20.37	22.06	1.0895	21.86	23.82	1.0960	23.27	25.50	1.1025	24.64	27.17
1.0831	20.39	22.08	1.0896	21.89	23.85	1.0961	23.29	25.53	1.1026	24.66	27.19
1.0832	20.41	22.11	1.0897	21.91	23.87	1.0962	23.31	25.55	1.1027	24.68	27.21
1.0833	20.43	22.13	1.0898	21.93	23.90	1.0963	23.33	25.58	1.1028	24.70	27.24
1.0834	20.46	22.16	1.0899	21.96	23.93	1.0964	23.35	25.60	1.1029	24.72	27.26
1.0835	20.48	22.19	1.0900	21.98	23.96	1.0965	23.37	25.63	1.1030	24.74	27.29
1.0836	20.50	22.21	1.0901	22.00	23.98	1.0966	23.39	25.66	1.1031	24.76	27.32
1.0837	20.52	22.24	1.0902	22.02	24.01	1.0967	23.41	25.68	1.1032	24.78	27.34
1.0838	20.54	22.26	1.0903	22.04	24.03	1.0968	23.44	25.71	1.1033	24.81	27.37
1.0839	20.56	22.29	1.0904	22.06	24.05	1.0969	23.46	25.73	1.1034	24.83	27.39
1.0840	20.59	22.32	1.0905	22.08	24.08	1.0970	23.48	25.76	1.1035	24.85	27.42
1.0841	20.62	22.35	1.0906	22.10	24.11	1.0971	23.50	25.79	1.1036	24.87	27.45
1.0842	20.64	22.38	1.0907	22.12	24.13	1.0972	23.52	25.81	1.1037	24.89	27.47
1.0843	20.66	22.40	1.0908	22.15	24.16	1.0973	23.55	25.84	1.1038	24.92	27.50
1.0844	20.68	22.42	1.0909	22.17	24.18	1.0974	23.57	25.86	1.1039	24.94	27.53

TABLE II.—*Extract in must*—Continued.

Specific gravity at 15°.	Extract.		Specific gravity at 15°.	Extract.		Specific gravity at 15°.	Extract.		Specific gravity at 15°.	Extract.	
	Per cent by weight.	Grams per 100 cc.		Per cent by weight.	Grams per 100 cc.		Per cent by weight.	Grams per 100 cc.		Per cent by weight.	Grams per 100 cc.
1.1040	24.96	27.56	1.1095	26.16	29.03	1.1150	27.29	30.43	1.1205	28.38	31.81
1.1041	24.98	27.58	1.1096	26.18	29.06	1.1151	27.31	30.45	1.1206	28.40	31.83
1.1042	25.00	27.60	1.1097	26.20	29.08	1.1152	27.33	30.47	1.1207	28.42	31.86
1.1043	25.03	27.63	1.1098	26.23	29.11	1.1153	27.35	30.50	1.1208	28.44	31.88
1.1044	25.05	27.66	1.1099	26.25	29.13	1.1154	27.37	30.52	1.1209	28.46	31.90
1.1045	25.07	27.69	1.1100	26.27	29.16	1.1155	27.38	30.55	1.1210	28.48	31.93
1.1046	25.09	27.72	1.1101	26.29	29.19	1.1156	27.40	30.57	1.1211	28.50	31.95
1.1047	25.11	27.74	1.1102	26.31	29.21	1.1157	27.42	30.59	1.1212	28.52	31.98
1.1048	25.14	27.77	1.1103	26.33	29.24	1.1158	27.44	30.62	1.1213	28.54	32.00
1.1049	25.16	27.79	1.1104	26.35	29.26	1.1159	27.46	30.64	1.1214	28.56	32.03
1.1050	25.18	27.82	1.1105	26.37	29.29	1.1160	27.48	30.67	1.1215	28.58	32.05
1.1051	25.20	27.85	1.1106	26.39	29.32	1.1161	27.50	30.69	1.1216	28.60	32.08
1.1052	25.22	27.87	1.1107	26.41	29.34	1.1162	27.52	30.72	1.1217	28.62	32.11
1.1053	25.24	27.90	1.1108	26.44	29.37	1.1163	27.54	30.75	1.1218	28.64	32.13
1.1054	25.27	27.93	1.1109	26.46	29.39	1.1164	27.56	30.77	1.1219	28.66	32.15
1.1055	25.29	27.96	1.1110	26.48	29.42	1.1165	27.58	30.80	1.1220	28.68	32.18
1.1056	25.31	27.98	1.1111	26.50	29.44	1.1166	27.60	30.82	1.1221	28.70	32.20
1.1057	25.33	28.00	1.1112	26.52	29.46	1.1167	27.62	30.85	1.1222	28.72	32.23
1.1058	25.35	28.03	1.1113	26.54	29.49	1.1168	27.64	30.87	1.1223	28.74	32.25
1.1059	25.38	28.06	1.1114	26.56	29.51	1.1169	27.66	30.89	1.1224	28.76	32.27
1.1060	25.40	28.09	1,1115	26.58	29.54	1.1170	27.68	30.92	1.1225	28.78	32.30
1.1061	25.42	28.12	1.1116	26.60	29.57	1.1171	27.70	30.94	1.1226	28.80	32.32
1.1062	25.44	28.14	1.1117	26.62	29.59	1.1172	27.72	30.97	1.1227	28.82	32.35
1.1063	25.46	28.17	1.1118	26.64	29.61	1.1173	27.74	31.00	1.1228	28.84	32.37
1.1064	25.48	28.19	1.1119	26.66	29.64	1.1174	27.76	31.02	1.1229	28.86	32.40
1.1065	25.50	28.22	1.1120	26.68	29.67	1.1175	27.78	31.05	1.1230	28.88	32.43
1.1066	25.52	28.25	1.1121	26.70	29.69	1.1176	27.80	31.07	1.1231	28.90	32.45
1.1067	25.54	28.27	1.1122	26.72	29.71	1.1177	27.82	31.09	1.1232	28.92	32.48
1.1068	25.57	28.30	1.1123	26.75	29.74	1.1178	27.84	31.12	1.1233	28.94	32.50
1.1069	25.59	28.32	1.1124	26.77	29.77	1.1179	27.86	31.15	1.1234	28.96	32.53
1.1070	25.61	28.35	1.1125	26.79	29.80	1.1180	27.88	31.18	1.1235	28.98	32.56
1.1071	25.63	28.38	1.1126	26.81	29.83	1.1181	27.90	31.20	1.1236	29.00	32.58
1.1072	25.65	28.40	1.1127	26.83	29.85	1.1182	27.92	31.23	1.1237	29.02	32.60
1.1073	25.67	28.43	1.1128	26.85	29.88	1.1183	27.94	31.25	1.1238	29.04	32.63
1.1074	25.69	28.45	1.1129	26.87	29.90	1.1184	27.96	31.27	1.1239	29.06	32.65
1.1075	25.71	28.48	1.1130	26.89	29.93	1.1185	27.98	31.30	1.1240	29.08	32.68
1.1076	25.73	28.51	1.1131	26.91	29.95	1.1186	28.00	31.32	1.1241	29.10	32.71
1.1077	25.75	28.53	1.1132	26.93	29.97	1.1187	28.02	31.35	1.1242	29.12	32.73
1.1078	25.78	28.56	1.1133	26.95	30.00	1.1188	28.04	31.37	1.1243	29.14	32.76
1.1079	25.80	28.58	1.1134	26.97	30.02	1.1189	28.07	31.40	1.1244	29.16	32.78
1.1080	25.82	28.61	1.1135	26.99	30.06	1.1190	28.09	31.43	1.1245	29.18	32.81
1.1081	25.84	28.64	1.1136	27.01	30.08	1.1191	28.11	31.45	1.1246	29.20	32.83
1.1082	25.86	28.66	1.1137	27.03	30.10	1.1192	28.13	31.48	1.1247	29.22	32.86
1.1083	25.89	28.69	1.1138	27.05	30.13	1.1193	28.15	31.51	1.1248	29.24	32.89
1.1084	25.91	28.72	1.1139	27.07	30.15	1.1194	28.17	31.53	1.1249	29.26	32.91
1.1085	25.93	28.75	1.1140	27.09	30.18	1.1195	28.19	31.56	1.1250	29.28	32.94
1.1086	25.96	28.78	1.1141	27.11	30.20	1.1196	28.21	31.59	1.1251	29.30	32.96
1.1087	25.98	28.80	1.1142	27.13	30.22	1.1197	28.23	31.61	1.1252	29.32	32.99
1.1088	26.01	28.83	1.1143	27.15	30.25	1.1198	28.25	31.63	1.1253	29.34	33.02
1.1089	26.03	28.86	1.1144	27.17	30.27	1.1199	28.27	31.65	1.1254	29.36	33.04
1.1090	26.05	28.89	1.1145	27.19	30.31	1.1200	28.28	31.68	1.1255	29.38	33.07
1.1091	26.07	28.92	1.1146	27.21	30.33	1.1201	28.30	31.70	1.1256	29.40	33.09
1.1092	26.09	28.94	1.1147	27.23	30.35	1.1202	28.32	31.73	1.1257	29.42	33.12
1.1093	26.12	28.97	1.1148	27.25	30.37	1.1203	28.34	31.75	1.1258	29.45	33.14
1.1094	26.14	29.00	1.1149	27.27	30.40	1.1204	28.36	31.78	1.1259	29.47	33.17

TABLE III.—*Temperature corrections for the specific gravity of alcohol.*

Temperature.	Water.	5 per cent (sp. gr. 0.993).	10 per cent (sp. gr. 0.987).	15 per cent (sp. gr. 0.981).	20 per cent (sp. gr. 0.976).	25 per cent (sp. gr. 0.971).
10°	0.0006	0.0006	0.0011	0.0012	0.0015	0.0019
11°	.0005	.0005	.0008	.0009	.0011	.0015
12°	.0004	.0004	.0006	.0007	.0008	.0011
13°	.0003	.0003	.0004	.0004	.0005	.0007
14°	.0001	.0001	.0002	.0002	.0002	.0003
15°	.0000	.0000	.0000	.0000	.0000	.0000
16°	.0002	.0002	.0002	.0003	.0004	.0005
17°	.0003	.0003	.0004	.0006	.0009	.0010
18°	.0005	.0005	.0007	.0010	.0013	.0015
19°	.0007	.0007	.0010	.0013	.0018	.0020
20°	.0009	.0009	.0013	.0017	.0022	.0026
21°	.0011	.0011	.0015	.0020	.0026	.0031
22°	.0013	.0013	.0018	.0023	.0031	.0036
23°	.0016	.0016	.0021	.0027	.0035	.0042
24°	.0018	.0018	.0024	.0030	.0039	.0047
25°	.0021	.0021	.0027	.0034	.0044	.0053
26°	.0023	.0024	.0030	.0038	.0049	.0059
27°	.0026	.0027	.0033	.0042	.0054	.0065
28°	.0028	.0030	.0037	.0047	.0059	.0072
29°	.0031	.0033	.0040	.0051	.0064	.0078
30°	.0034	.0037	.0044	.0056	.0070	.0085

TABLE IV.—*Allihn's table for the determination of dextrose.*[1]

Milligrams of copper.	Milligrams of dextrose.	Milligrams of copper.	Milligrams of dextrose.	Milligrams of copper.	Milligrams of dextrose.	Milligrams of copper.	Milligrams of dextrose.	Milligrams of copper.	Milligrams of dextrose.
10	6.1	58	29.8	106	54.0	154	78.6	202	103.7
11	6.6	59	30.3	107	54.5	155	79.1	203	104.2
12	7.1	60	30.8	108	55.0	156	79.6	204	104.7
13	7.6	61	31.3	109	55.5	157	80.1	205	105.3
14	8.1	62	31.8	110	56.0	158	80.7	206	105.8
15	8.6	63	32.3	111	56.5	159	81.2	207	106.3
16	9.0	64	32.8	112	57.0	160	81.7	208	106.8
17	9.5	65	33.3	113	57.5	161	82.2	209	107.4
18	10.0	66	33.8	114	58.0	162	82.7	210	107.9
19	10.5	67	34.3	115	58.6	163	83.3	211	108.4
20	11.0	68	34.8	116	59.1	164	83.8	212	109.0
21	11.5	69	35.3	117	59.6	165	84.3	213	109.5
22	12.0	70	35.8	118	60.1	166	84.8	214	110.0
23	12.5	71	36.3	119	60.6	167	85.3	215	110.6
24	13.0	72	36.8	120	61.1	168	85.9	216	111.1
25	13.5	73	37.3	121	61.6	169	86.4	217	111.6
26	14.0	74	37.8	122	62.1	170	86.9	218	112.1
27	14.5	75	38.3	123	62.6	171	87.4	219	112.7
28	15.0	76	38.8	124	63.1	172	87.9	220	113.2
29	15.5	77	39.3	125	63.7	173	88.5	221	113.7
30	16.0	78	39.8	126	64.2	174	89.0	222	114.3
31	16.5	79	40.3	127	64.7	175	89.5	223	114.8
32	17.0	80	40.8	128	65.2	176	90.0	224	115.3
33	17.5	81	41.3	129	65.7	177	90.5	225	115.9
34	18.0	82	41.8	130	66.2	178	91.1	226	116.4
35	18.5	83	42.3	131	66.7	179	91.6	227	116.9
36	18.9	84	42.8	132	67.2	180	92.1	228	117.4
37	19.4	85	43.4	133	67.7	181	92.6	229	118.0
38	19.9	86	43.9	134	68.2	182	93.1	230	118.5
39	20.4	87	44.4	135	68.8	183	93.7	231	119.0
40	20.9	88	44.9	136	69.3	184	94.2	232	119.6
41	21.4	89	45.4	137	69.8	185	94.7	233	110.1
42	21.9	90	45.9	138	70.3	186	95.2	234	120.7
43	22.4	91	46.4	139	70.8	187	95.7	235	121.2
44	22.9	92	46.9	140	71.3	188	96.3	236	121.7
45	23.4	93	47.4	141	71.8	189	96.8	237	122.3
46	23.9	94	47.9	142	72.3	190	97.3	238	122.8
47	24.4	95	48.4	143	72.9	191	97.8	239	123.4
48	24.9	96	48.9	144	73.4	192	98.4	240	123.9
49	25.4	97	49.4	145	73.9	193	98.9	241	124.4
50	25.9	98	49.9	146	74.4	194	99.4	242	125.0
51	26.4	99	50.4	147	74.9	195	100.0	243	125.5
52	26.9	100	50.9	148	75.5	196	100.5	244	126.0
53	27.4	101	51.4	149	76.0	197	101.0	245	126.6
54	27.9	102	51.9	150	76.5	198	101.5	246	127.1
55	28.4	103	52.4	151	77.0	199	102.0	247	127.6
56	23.8	104	52.9	152	77.5	200	102.6	248	128.1
57	29.3	105	53.5	153	78.1	201	103.1	249	128.7

[1] Taken from Bul. 46, Division of Chemistry, p. 35 et seq.

TABLE IV.—*Allihn's table for the determination of dextrose*—Continued.

Milligrams of copper.	Milligrams of dextrose.	Milligrams of copper.	Milligrams of dextrose.	Milligrams of copper.	Milligrams of dextrose.	Milligrams of copper.	Milligrams of dextrose.	Milligrams of copper.	Milligrams of dextrose.
250	129.2	293	152.7	336	176.5	379	200.8	422	225.7
251	129.7	294	153.2	337	177.0	380	201.4	423	226.3
252	120.3	295	153.8	338	177.6	381	202.0	424	226.9
253	130.8	296	154.3	339	178.1	382	202.5	425	227.5
254	131.4	297	154.9	340	178.7	383	203.1	426	228.0
255	131.9	298	155.4	341	179.3	384	203.7	427	228.6
256	132.4	299	156.0	342	179.8	385	204.3	428	229.2
257	133.0	300	156.5	343	180.4	386	204.8	429	229.8
258	133.5	301	157.1	344	180.9	387	205.4	430	230.4
259	134.1	302	157.6	345	181.5	388	206.0	431	231.0
260	134.6	303	158.2	346	182.1	389	206.5	432	231.6
261	135.1	304	158.7	347	182.6	390	207.1	433	232.2
262	135.7	305	159.3	348	183.2	391	207.7	434	232.8
263	136.2	306	159.8	349	183.7	392	208.3	435	233.4
264	136.8	307	160.4	350	184.3	393	208.8	436	233.9
265	137.3	308	160.9	351	184.9	394	209.4	437	234.5
266	137.8	309	161.5	352	185.4	395	210.0	438	235.1
267	138.4	310	162.0	353	186.0	396	210.6	439	235.7
268	138.9	311	162.6	354	186.6	397	211.2	440	236.3
269	139.5	312	163.1	355	187.2	398	211.7	441	236.9
270	130.0	313	163.7	356	187.7	399	212.3	442	237.5
271	140.6	314	164.2	357	188.3	400	212.9	443	238.1
272	141.1	315	164.8	358	188.9	401	213.5	444	238.7
273	141.7	316	165.3	359	189.4	402	214.1	445	239.3
274	142.2	317	165.9	360	190.0	403	214.6	446	239.8
275	142.8	318	166.4	361	190.6	404	215.2	447	240.4
276	143.3	319	167.0	362	191.1	405	215.8	448	241.0
277	143.9	320	167.5	363	191.7	406	216.4	449	241.6
278	144.4	321	168.1	364	192.3	407	217.0	450	242.2
279	145.0	322	168.6	365	192.9	408	217.5	451	242.8
280	145.5	323	169.2	366	193.4	409	218.1	452	243.4
281	146.1	324	169.7	367	194.0	410	218.7	453	244.0
282	146.6	325	170.3	368	194.6	411	219.3	454	244.6
283	147.2	326	170.9	369	195.1	412	219.9	455	245.2
284	147.7	327	171.4	370	195.7	413	220.4	456	245.7
285	148.3	328	172.0	371	196.3	414	221.0	457	246.3
286	148.8	329	172.5	372	196.8	415	221.6	458	246.9
287	149.4	330	173.1	373	197.4	416	222.2	459	247.5
288	149.9	331	173.7	374	198.0	417	222.8	460	248.1
289	140.5	332	174.2	375	198.6	418	223.3	461	248.7
290	151.0	333	174.8	376	199.1	419	223.9	462	249.3
291	151.6	334	175.3	377	199.7	420	224.5	463	249.9
292	152.1	335	175.9	378	200.3	421	225.1		

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